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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. II.—5TH YEAR. SYDNEY: SATURDAY, OCTOBER 12, 1918. No. 15.

THE MENTALLY DEFICIENT.[1]

By **P. A. R. Lalor, M.B., B.S. (Melb.),**
Acting Medical Superintendent, Mental Diseases Hospital, New Norfolk, Tasmania.

I have proposed to take up my remarks from the point where Dr. Morris in his lecture to you a year ago left off. You will remember that he classified the mentally defective into the four main classes of:—

(*a*) The idiot.
(*b*) The imbecile.
(*c*) The feeble-minded.
(*d*) The moral imbecile, or moron.

In regard to this matter, it is very remarkable that society only deals and makes provision for the idiots and imbeciles, which class, from a racial point of view, is the least dangerous of the whole mentally deficient, on account of the fact that they are the most easily certifiable under the present law.

No effort has been made in any scientific way for dealing with the latter two classes in any State of the Commonwealth, or, indeed, in any part of the British Empire, and yet the feeble-minded person and the moron are really the most dangerous type from a racial point of view with which we have to deal. One or two heredity charts, which I will show you this afternoon, will indicate to you how dangerous are the members of this particular and yet least easily certifiable class of the community.

It is necessary first of all, before dealing with a subject of this nature, to define exactly and concisely what the feeble-minded really are. Persons classed as feeble-minded, or morons, may be defined as those who, although up to the present not legally certifiable as mentally deficient, on account of hereditary taint or lack of moral responsibility, are incapable of competing with their normal fellows, and, consequently, form the class of the wholly or partially ineducable, or, from the same causes, the paupers, criminals, or prostitutes, who are a danger to the State by reason of their propagating mentally deficient offsprings. They are the more difficult to deal with on account of the fact that they are not easily recognizable, except to the mental expert, and may frequently cause a great deal of trouble, because they are apparently in full possession of their faculties. But it is necessary in this twentieth century for us to ask ourselves how many of the individuals, particularly those in early adult life, whom we incarcerate in our gaols and thus brand for life as criminals, are really and truly responsible for the actions which have caused them to be classed amongst the criminals. It is well known to all who have any dealings with the criminally insane that more than 50% of them show the outward stigmata of mental degeneracy. This being so, are we not dealing in a semi-mediæval manner with persons who are by no means to be considered as duly responsible for the crimes they commit?

(1) Firstly, the protection of the incompetent and inefficient from poverty and want. In this regard the mental specialist time and again meets with persons who, in the combat of life, are left behind, and, being through mental deficiency incompetent to compete with their fellows, join, gradually, but surely, the ranks of the unemployable. They are unable to keep for any length of time any employment which they may get, owing to the almost insuperable obstacle of their weak and degenerate make-up. This results in their wandering from place to place and from job to job, until they finally reach their level in some institution such as the New Town Infirmary, whence, no doubt, they subsequently find their way to some mental institute, where, if proper laws were in existence they would have originally been placed. Consequently, after having done a great deal of damage, and having been a burden and a drain on their relatives for a considerable time, and perhaps for a certain time having augmented the ranks of the criminal classes, they become pensioners on the State in some infirmary or mental institute. In addition, many of them have left behind a woeful bequest to the State in the shape of numerous mentally deficient children, who will, in their turn, according to the beneficent laws at present in existence, propagate numerous mentally deficient children to carry on and aggravate in each succeeding generation the mental deficiency of their progenitor. The famous Jukes family may be cited as a startling commentary on our present haphazard and unscientific system. This family, it is estimated, cost the United States of America some £500,000 for the care of the paupers, criminals and degenerates who were the outcome of one mentally deficient couple.

(2) The protection of the irresponsible and those who lack control, from becoming criminals and suffering imprisonment due to ignorance and uncontrollable vicious impulses.

These individuals are met with each day in our police courts, and, in fact, it is very doubtful whether great numbers of those who commit grotesque and unnatural crimes are not, by reason of their mental deficiency, guilty of sadistic and masochistic offences, all of which offences under a sane and rational system could be averted. Think for a moment of the expense caused to the State by the support and prior prosecution of these unfortunates, and also try and realize the amount of suffering, poverty and vice which these inefficient members of our population cause in the State. They almost invariably marry, and just as invariably are the branches no better than the tree from which they spring, that is, rotten by reason of the canker which is at the root of their origin. I do not think one would be over-stating it if one was to say that fully 75% of our juvenile criminals are morally deficient, and this is shown by the fact that the British Royal Commission of 1908 declared that almost 5% of the children of the United Kingdom were mentally deficient. Do we realize that we are throwing each year numerous potential criminals on the world, to compete with others in the struggle for

[1] Being a Lecture delivered on July 12, 1918, to the Women's Health Association, Hobart.

existence, quite heedless of what their final end may be and of what damage they may do before that end—which is the gaol or the asylum—is reached?

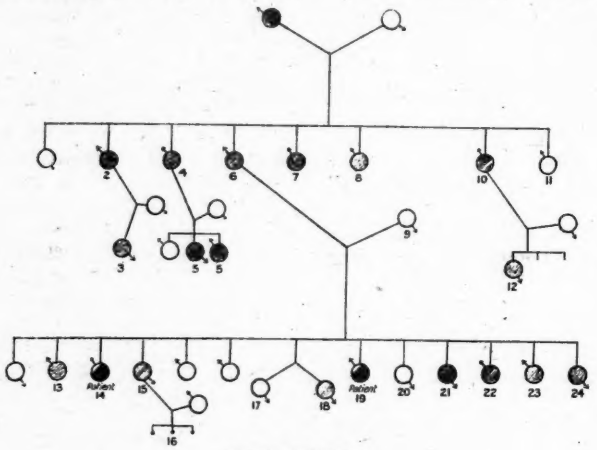
(3) The protection of the family from contamination and degeneration. The family, as we understand that term, is practically the unit of our State. It is impossible to exaggerate the importance of each little family circle to the State at large. It is here that the future population of the State is recruited, and it is also here that this recruiting may be made or marred. This social problem is really the most important with which our Government have to deal, but the means they adopt are calculated to make the angels weep. They will spend thousands of pounds on a railway from Hell's End to Lightning Ridge for the sole purpose of gaining some hundred votes to return them to ministerial office or £200 per year, and yet if one were to ask them to spend a few pounds in the direction of saving the very cradle and origin of our race from corruption, they will hesitate, and will, no doubt, say that such a step as is proposed will cost too much money, and has never been done before in the history of the English-speaking race.

These are the futile arguments which they presume to address when dealing with an important racial problem, as if, forsooth, the British race were not remarkable, unfortunately, for their lack of thoroughness in scientific matters and too fond of "muddling through somehow." If, in the near future, there is any such subject being introduced into Parliament of any State, listen carefully for the time-serving politician's remark that: "There is no precedent for this in any other country's legislation." Now, was there any precedent for the introduction of compulsory vaccination, compulsory education, compulsory isolation, or any of the other compulsory laws which we have brought into force for the good of the community? Is it not to the eternal disgrace of the British people that they allowed a Jenner almost to starve in a garret in London and a Simpson to be almost overwhelmed with unjust opprobrium? And yet who would dare to state now-a-days that compulsory vaccination and the introduction of chloroform as an anæsthetic have not saved countless lives and obviated a world full of suffering. Are we to be restrained by such arguments, although a tiny State, from being the first, as we were in the introduction of the ballot box, to institute a proper system of preventive treatment for this scourge of the human race. There is, after all, not much credit in following some other country's track when legislation has found to be beneficial. Let us have the courage to initiate and push it to its logical conclusion.

This brings me now to the real object of this lecture, that is, the proper control and treatment of the feeble-minded and the moron.

Before commencing on this subject in its detail, I wish to show you the damage which this unhealthy origin of our species can cause.

In our genealogical tree it is seen that there are two families of epileptic origin, and, unfortunately, or fortunately perhaps for the race, there has been an intermarriage between them. Mott's law of anticipation is well exemplified. The epilepsy and its consequent feeble-mindedness in the earlier cases came on fairly late in life, and in each succeeding generation the age of onset of mental symptoms is anticipated or antedated, and at the same time aggravated, till at last, in the last generation, we find evidences of moral depravity in the shape of an illegitimate child, followed by a succession of children who became epileptic at the age of eight years, this presaging the ultimate extinction of a degenerate race. Truly is Darwin's law of the survival of the fittest and the extinction of the unfit exemplified in this chart. In the chart shown we find the result of mental deficiency even more disastrously portrayed. It starts with a violent and mentally unstable grandfather—and mark that this man would not be mentally certifiable under any lunacy act in the whole of our Commonwealth, yet he gives origin to a deplorable succession of neurotic and mentally unstable children. In succession, one after the other in the second generation, we find evidence of the same violence transmitted according to the Mendelian law, as a dominant throughout the whole number of his children. One committed suicide, one married and gave birth to a morally depraved offspring and the remainder displayed exaggerated violence and frequently met with early deaths and began to show the first signs of the extinction of the race, that is, of becoming one of the unemployable of the community. How can we expect such a second generation to produce anything but a worse third? We find the same history carried through with Mott's law of anticipation again exemplified, and finally we find that in one case where one of the family married there were three miscarriages and the majority of the remainder of this third generation died in early infancy, thus mercifully providing for the extinction of a rotten race. How much of the misery which was caused by this one couple, or, in the case of the first chart, by the other couple, could have been avoided, and how much waste of human life and expense to the State could have been saved by the application of proper examination and subsequently segregation and proper treatment of these first two couples? The



Genealogical Tree.

great British authority on this subject, Sherlock, who not only is a superintendent of a large idiot asylum in England, but is also a barrister, and, consequently, ideally capable of giving a medico-legal opinion on this abstruse problem, states that it is absolutely impossible to deal with this subject in anything but an ineffectual manner, unless one provides for two main points:—

(*a*) The compulsory detention of the feeble-minded; and

(*b*) The prevention of marriage or of any production of their species.

It is on these two points that all our attention must be directed. We British people have a habit of training an ivy or other creeper over an ugly stone wall and pretending that it is a beautiful bush, and that there is no ugly wall underneath at all. We obstinately refuse to recognize in many scientific subjects that the complete and open exposition of the subject to the public will be of incalculable benefit to the human race. We refuse to allow the subject of venereal diseases to be mentioned in public, to educate our innocent girls and boys to a proper knowledge of the importance of these sinister subjects; we will not allow progressive legislation, such as the contagious diseases act, to be introduced, on the silly, childish grounds of legalizing vice, and so expose many innocent wives and future children to the danger of being infected by this terrible scourge.

In regard to the compulsory detention of the feeble-minded, many objections will be raised. There is too much tendency now-a-days to regard the insane or mentally deficient in the nature of something approaching criminals, and to shut them away in buildings that very much, at least in this State, resemble gaols, and then to rest satisfied and complacent. It is a vestige of the dark ages still remaining in our community when such patients were treated very much as criminals would be treated. As Sherlock scathingly says:—

> The average man has regard of these unfortunates with mixed feelings; sometimes congratulating himself that he is not as they are, at other times pitying them; at most times being disgusted and horrified at the sight of them; at other periods in the world's history, reverencing them and regarding them as having supernatural powers, and now-a-days regarding them with amusement.
>
> And all these feelings have in turn passed over the surface of man's abysmal ignorance.

Some traces even yet of that ignorance is to be found in this twentieth century, and large numbers of people will regard it as a "stigma" that any of their relatives should ever have been in any mental institute; the same people would, without a blush, admit to the more disgraceful practice of race suicide and race destruction.

Our present system of dealing with the feeble-minded is nothing short of ludicrous, and shows that we still fall short of Bacon's idea: "Employing the divine gift of reason to the use and benefit of mankind." There is no hesitation and no question even from the most powerful of human reasons—the sentimental—concerning the compulsory segregation and detention of the leper and the individual suffering from small-pox or bubonic plague. What notice would be taken if a relative of a leper were to say to the authority when told that her son or husband was to be forcibly detained in a lazarette, that it was inhuman and contrary to all laws of humanity that such relative should be prevented from seeing his people or home again and from marrying and living his life like the rest of his fellow human beings? The scourge of mental deficiency is infinitely greater in all its aspects from that of leprosy. It is not only more common, possibly because we neglect to take the proper prophylactic measures against it, but is also the more dreadful in its results, even down to the fourth and fifth generation, or until it extinguishes the race, as we have seen. The Jukes family, which cost the State half a million and provided fifteen hundred or more mental deficients from one mentally deficient couple, shows the protean nature of this terrible defect; and yet what does the State do in comparison to what it does for leprosy? It calmly allows, without any examination or without any hindrance, the propagation of the unfit, the manufacture of criminals, the perpetuation of the prostitute, the provision of a constant supply of unemployable and frequently immoral degenerates, and every now and again locks up one or two of them for the rest of their lives, either in a gaol or an asylum, and unfortunately and most unjustly even hangs one or two of them. So as not to allow any chance of the damage not being complete, they occasionally allow one of these mentally deficient criminals or moral degenerates at large, in order that the supply of criminals and moral degenerates will be increased. It is, therefore, in short, quite idle to deal with this subject without one of two methods being adopted. Either (1) the sterilization or asexualization by surgical means, or (2) the compulsory detention of the unfit.

In regard to sterilization, it is a very risky proposition, and, considering the large numbers that would have to be dealt with, it is doubtful whether it could be used as a general method in such cases. As Sherlock says: "The conditions under which this method would be feasible are rare." It is possible that it might be practised under suitable control in those cases where ungoverned sexual instinct leads to crimes against the person, and might prove advantageous, not only to society at large, but also to the offender himself. Consequently, in Great Britain, the opinion leans to the compulsory detention under suitable pleasant and advantageous conditions of all those who form this borderland group of mental deficiency, and the *Mental Deficiency Act, 1913* (Imperial Statute), give the local or the educational authority power to commit continuously those who cannot be educated, the unemployable and the criminal mental deficient, to a colony up to the age of 21 years and after, if necessary.

(To be continued.)

THE SYMPTOMATOLOGY OF THE DISORDERS OF THE STOMACH FROM THE PHYSIOLOGICAL ASPECT.

By **A. E. Mills, M.B. (Syd.),**
Honorary Physician, Royal Prince Alfred Hospital; Lecturer in Medicine, University of Sydney.

(Continued from page 282.)

Now we must not confuse tension with distension. The dilated stomach is a distended stomach, and it

might give rise to no pain, because there will be little tension upon the sensory nerves. On the other hand, the tension on the neuro-muscular coat of the intestine in a case of lead poisoning, where the intestine is greatly and spastically contracted, causes considerable pain. Again, the time factor has to be taken into consideration. Tension may be rapidly increased, and pain may result, to disappear when time is given for the muscular coat to relax. Let us remember also that an organ like the stomach, so easily adapting itself to changes in size without causing discomfort, contrasts markedly with a muscular tube like the ureter, which was never intended to be distended, or, to put it in another way, to apply appropriate physiological phraseology, the threshhold for the adequate painful stimulus in the case of the ureter is low; in the case of the stomach it is high. We can apply the same views to all the hollow viscera, and, indeed, to the solid viscera. Who has not seen the painful, enlarged, *i.e.*, distended, liver and spleen, and who has not seen these organs greatly distended and painless? It is frequently stated that malignant disease of the liver is a painful disease, but this statement is only partially true. If the malignant growth be rapid, the stretching of the liver capsule will be great, and much pain will be experienced. On the other hand, the slow growing neoplasm in the liver may cause little or no pain, because the capsule has had time to accommodate itself to the altered size of the organ. In a rapidly failing heart the liver enlarges and becomes painful and tender. As the heart improves under treatment, the liver may still remain large, but it is no longer painful. The tension on the capsule has diminished. Let us also grasp this fundamental fact, that tension in the hollow viscus may be as great or greater when the lumen of the viscus is small, as when it is large. The diameter of the hollow viscus is no indication of the tension on its contents. Distension is no index of tension and *vice versa*. The dead stomach exerts no tension on its contents unless it be filled. The living stomach, with its neuro-muscular mechanism in a highly irritable state may offer considerable resistance to even slight distension, and the tension exerted on its contents may be so great as to cause considerable pain. The colon, in a state of spastic contraction, as one sees it sometimes in cases of acute colitis, may be very painful, whereas in other conditions the colon may be greatly distended and evoke no painful sensations. I think I am right in saying that pain in stomach disorders is not so severe as is experienced in disorders of some of the neighbouring viscera. Greatly increased tension within the gall-bladder, due, say, to a blockage of the cystic duct, may cause almost unbearable pain and, incidentally, that feeling of fullness in the stomach that I have already mentioned, as the following case illustrates:—

A friend of mine some years ago suffered from attacks of well-marked cholecystitis, associated with gall-stones. One day he was seized with an acute attack of appendicitis. There was intense pain in the region of the appendix, as well as a sense of pain in the epigastric region. He was operated upon, and an inflamed and tense appendix was removed. The surgeon thought it advisable to examine the gall-bladder. This was found to contain some large gall-stones. These were removed. Unfortunately, although the bile ducts were examined, a small stone in the cystic duct was overlooked. Subsequently, while there was still a fistulous opening caused by the tube that had drained the gall-bladder, the patient had an acute and almost unbearable attack of pain in the region of the gall-bladder. This was immediately relieved by the discharge of a considerable quantity of mucus through a small tube passed along the fistulous track. For years the patient retained a small, solid tube along the fistulous track to his gall-bladder. This solid tube served as a block to the escape of bile, and maintained the patency of a track by which, when the gall-bladder became over-distended, the contents could be evacuated. He suffered occasionally from great pain over the gall-bladder, and after the evacuation of the contents of this viscus there was always relief of tension and disappearance of pain. When the pain was severe the tension was very great, for the contents of the gall-bladder flowed out under considerable pressure. The patient also suffered, more or less constantly, from a feeling of fullness in his epigastrium, a fullness which at times amounted to actual pain. Some little time ago he submitted to a further operation. The little stone which occluded the cystic duct was removed and the gall-bladder was dissected away, lest the cystic duct might become definitely stenosed, as a result of the damage caused by the stone so long retained in its lumen. Never since has he had any acute pain, but at times even now he suffers from fullness and some slight pain in the epigastrium about the region of his pylorus. This pain I consider to be due to the great irritability of the pyloric canal, a remnant of that more or less constant irritability produced reflexly from the nocuous effect of the stone in the cystic duct. This nocuous influence probably caused a disturbance of gastric secretion, a hyper-acidity which again, as we shall see later, may be the cause of, or frequently associated with, hyper-tonus. At any rate, at my suggestion for these later attacks, the patient takes bicarbonate of soda and obtains almost instant relief from fullness and pain. The alkali can only have the effect of neutralizing the acidity of the stomach contents. It is, I think, a justifiable inference that the hyperacidity maintained a degree of tension or increased the tension in the pyloric canal, even to the extent of causing pain, which disappeared when the acidity was neutralized.

As further illustrating the view that pain is the result of tension, I would have you refer for a moment to your own personal experiences. I take it for granted that each of you has suffered from intestinal colic at some period of your life. You will recall the nasty, grinding nausea, producing pain, working up to a climax and then passing completely away, to return, may be, in a different region in a very short time, and frequently to be followed by a borborygmus as the imprisoned flatus, under great tension, is moved by peristaltic action. Now peristalsis alone does not cause pain, nor even increased peristalsis, for we have all observed cases, and possibly had personal experience of greatly increased peristalsis, with profuse diarrhœa, where pain is entirely absent. Why then is pain present in some cases and absent in others?

Let me call your attention to some observations of Bayliss and Starling[7] on the movements of the intestine. Their observations were made on animals whose nerve plexuses in the abdomen were extirpated or whose splanchnic nerves were divided, or whose cord from the mid-dorsal region downward was destroyed in order to remove the disturbing influence of reflexes from the central nervous system. The abdomens of animals previously so treated were opened in a bath of warm saline solution, to prevent the evil effects of drying. When a rubber balloon filled with air was inserted into the lumen of the gut, rhythmic contractions of the circular muscle occurred at regular intervals. If now the gut be pinched above the balloon there will be an immediate relaxation, that is, inhibition of the wall of the gut below the balloon. This inhibitory influence, caused by the local stimulus of pinching, may extend 30 cm. down the intestine towards the ileo-caecal valve, and again pinching the gut 1.25 cm. below the balloon causes strong continued contractions to occur at the balloon itself. It will be seen, therefore, that stimulation at any part of the intestine causes contraction above the point of stimulus and relaxation below the point of stimulus, and this is known as the "law of the intestine." Contraction above and relaxation below, *i.e.*, "the law of the intestine" is only a local expression of a general law governing the co-ordinated functional activity of muscles elsewhere.

This general law, the law of reciprocal innervation, worked out in such a masterly way by Sherrington,[8] expressed briefly, is that activity of any one functional group of muscles is accompanied by inhibition of the opposing group, *e.g.*, when flexors are in action extensors are inhibited. This inhibition is no mere passive state. It is just as true a sign of functional activity as actual contraction of the muscles. Now this law of reciprocal innervation, as exhibited by the intestine, is apt to be disturbed by varying causes. Sherrington[8] has shown that strychnine and tetanus toxin disturb it and convert inhibition into contraction. In Sherrington's own words, "the protagonist and antagonist are thrown together into synchronous contraction as an effect of strychnine." It is easy to conceive that many causes, mechanical or chemical, may affect in a disorderly manner the law of reciprocal innervation governing the movements of the alimentary canal. Supposing that contraction at one portion of the intestine causes synchronously in a part a short distance beyond, contraction instead of inhibition, there may and probably will occur in the intervening segment a state of greatly increased tension, and pain will result, and will only be relieved when one or the other set of contracting muscle fibres relaxes from its state of activity. This, I take it, is the explanation of the pain that occurs in intestinal colic. In the case of the stomach this law is equally applicable, but in the stomach we have a greatly differentiated part of the alimentary canal, with its entrance and exit surrounded by definite sphincter muscles. The cardiac sphincter is inhibited as the contracting waves of the circular fibres of the œsophagus approach it, and so the food passes through to the stomach without difficulty. Then the sphincter contracts, to be again inhibited, as a new wave of contraction of the œsophagus approaches it. But this rhythmic alternate contraction and inhibition, in conformity with the law of reciprocal innervation, is rudely disturbed if the succeeding boluses of food be swallowed too quickly. Then there arises a condition when a contracting wave is followed, not by inhibition of the succeeding segment, but by contraction. This leads to that painful feeling of a lump behind the sternum or the region of the cardia, which, doubtless, we have all experienced. With regard to the pylorus traction of the pyloric vestibule is followed by inhibition of the pyloric sphincter. Indeed, it has been shown over and over again that many contractions of the pyloric canal take place before the pyloric sphincter relaxes to allow of some of the stomach contents to be forced through into the duodenum. There is good reason for this if we bear in mind that these peristaltic waves have other purposes than merely to propel food through the pyloric sphincter. We have to remember that only in the pyloric mill is the food thoroughly mixed with the acid digestive juice, and that this mixing is accomplished by the frequent contractile waves passing over this portion of the stomach. As many waves, so to speak, beat up against the closed sphincter, the amount of pressure they exert cannot be very great or discomfort would result, for in cases where the pyloric waves are very strong and vigorous, where obviously the tension within the pylorus is very great, pain is experienced. Such a condition we have in pyloro-spasm. X-ray workers have shown us that spasm occurs, not only in the pylorus, but in other parts of the stomach, that spasm may arise from causes within the stomach itself, such as gastric ulcer and gastric cancer; that it may arise from causes outside the stomach, *e.g.*, duodenal ulcer, cholecystitis, appendicitis and in nervous states, such as emotional disturbances and tabes and in renal and ureteral calculi and poisoning by lead. In the case of gastric ulcer there may be spasms of the pylorus, as well as a localized spasm of the circular muscular fibres in the plane of the ulcer itself, leading to a definite indentation—the so-called incisura—in the outline of the stomach opposite the site of the ulcer, as seen by X-rays. Sometimes the localized spasm is so great that it involves a great part of the lumen of the stomach and brings about such a marked contraction that the stomach seems to be separated into two parts, with a narrow, intervening portion; this is the so-called "hour-glass" stomach. The spasms leading to a gastric incisura, when arising from gastric ulcer, are constant and stationary and persist after the patient has been given an anti-spasmodic, such as belladonna.

Associated with these states just mentioned, there is often a hyperacid gastric juice and hyper-secretion of the same. The hyper-acidity may result from disturbance of the nervous system, *e.g.*, in certain neurasthenic people, who complain of severe epigastric pain. In these various conditions that I have mentioned there is one common symptom referable to the stomach, pain and a frequently associated condition of hyper-acidity. The pain may be relieved by an alkali or by food; both the alkali and the food have the same effect: the neutralization of the acid secretion.

It will not be without interest to discuss briefly

with you the wonderful automatic action of the pyloric sphincter. Cannon has shown from his own numerous observations, and from the observations of others, that acid on the stomach side of the pylorus causes inhibition of the pyloric sphincter, while acid on the duodenal side leads to contraction of the sphincter. With regard to the first statement, let me present the evidence for it. (Cannon.[4])

(1) Moistening carbo-hydrates with bicarbonate of soda retards their normal rapid exit from the stomach.

(2) Feeding proteids as acid proteids remarkably hastens their normally slow exit.

(3) Observations by means of a fistula in the vestibule show that an acid reaction closely precedes the initial passage of food through the pylorus, and that the introduction of acid causes pyloric opening; delaying the acid reaction causes retention of food in the stomach, in spite of strong peristalsis.

(4) The empty stomach of a cat was removed immediately after death by etherization and placed in warm oxygenated Ringer's solution; a small amount of 0.4% HCl made blue by Congo red was introduced through a tube into the fundus, which was placed at a lower level than the vestibule. The stomach was now inflated until air bubbled through the pylorus. When the pyloric tonus withstood the intragastric pressure, the stomach was gently and slowly turned until the acid came into the pylorus. In a moment the blue fluid poured forth into the Ringer's solution, the pylorus had opened. Further, a 1% solution of sodium bicarbonate, coloured red, similarly brought to the pylorus did not begin to emerge for a much longer time.

The evidence for the second statement is contained in the following experiments:—

(1) A duodenal fistula was made in a dog. A small quantity of acid solution of pure gastric juice was introduced. By repeated injections it was possible to prevent the discharge from the stomach for an unlimited time.

(2) Six grammes of lean beef were given to a dog similarly treated; the chyme was caused to leave the duodenum through the artificial opening. The stomach emptied in two and a half hours. The next day the dog was given the same amount of the same kind of food, but whenever a portion of the chyme came through the fistula, a similar portion of the chyme of the day before was injected through the fistula towards the intestines. The time of digestion became lengthened from two and a half hours to three and a half hours.

(3) The pancreatic duct and bile duct were tied so that no secretion flowed into the duodenum. The outgo from the stomach after a meal of potato and bismuth was determined and compared with the output of these substances under normal conditions. Nothing passed out in half an hour. One-quarter of the normal amount passed out in an hour and one-third of the normal amount in two hours.

From this evidence I think you will agree that there is justification for the statement previously made that acid on the stomach side opens the pylorus and acid on the duodenal side closes it, but certain conditions which are opposed to this view, must in fairness be stated.

It has been shown that an animal fed with potato acidified to the extent of 1%, discharges its contents much more slowly than when fed with potato acidified to 0.25%. It might be assumed that in cases of hyper-acidity there would be considerable delay in the passage of food from the stomach, but the hyper-acidity found clinically never reaches such a degree of acidity as 1%, and in duodenal ulcer, where hyper-acidity is very common, there is not retardation, but, on the contrary, a hastening of food through the pyloric sphincter. X-ray observers have shown that hyper-motility, hyper-peristalsis and hyper-secretion are almost pathognomonic of duodenal ulcer. In the hyper-motility and the hyper-peristalsis we have, I think, the explanation for the rapid passage of food from the stomach in ulcer of the duodenum, for in gastric ulcer it has been shown that there is hypo-peristalsis and hypo-motility, and a delay of the passage of food from the stomach, so that frequently, after six hours from the exhibition of a bismuth meal, considerable amounts of the meal are still present in the stomach. Hypo-motility and hypo-peristalsis must be looked upon as the cause for the delay.

It is well known that water passes out of the stomach and excites little or no flow of gastric juice. Further, in cases of *achylia gastrica*, where there is no acid and no pepsin secreted, the outflow from the stomach is unimpeded. I think it is reasonable to assume that during the period of inactivity of the stomach the pyloric sphincter is more or less relaxed. Probably it is only tonically contracted when the acid gastric juice begins to be secreted. Water causes no acid secretion, and as the pylorus remains more or less patent, it passes through quite rapidly. In the case of *achylia gastrica*, food in the stomach is probably in the same neutral condition as water, and there is, therefore, no obstruction to its passage into the duodenum through an atonic sphincter. In conditions where there is no free hydrochloric acid and a very small amount of combined acid, I have observed that the food passes through very quickly, so these conditions do not present any real difficulties. We must also remember that the peculiar action of acid, whether on the stomach or the duodenal side, does not act directly, but indirectly, through the myenteric reflex. In the case of duodenal ulcer, probably stronger stimuli arise from the ulcerated surfaee, and the reflex mechanism, as a consequence, is unduly excited.

Lastly, it must, I think, be accepted that the whole explanation of the action of the pyloric sphincter cannot be given at present, but this, at any rate, may be stated, that it is not opposed to the laws which govern the movements of the alimentary canal. Reciprocal innervation, as applied to the pylorus, still holds good, for, as Cannon[4] states, acid, when above, causes relaxation of the sphincter, which is below, and acid, when below, causes contraction of the sphincter, which is above.

Accepting the view of the acid control of the pylorus through the myenteric reflex, we can readily see that

this reflex may, like other reflexes, be excited or depressed. If acid be the adequate stimulus, as seems to be the case, then a hyper-acidity, as we find clinically, should still further excite it. On the other hand, in states of hypo-acidity, the reflex would be in a state of depression. We have some evidence for this, for in cases of duodenal ulcer or hyper-acidity there is hyper-motility. In cases of gastric ulcer or hypo-acidity there is hypo-motility. In hyper-acidity, rapid exit of food through the pylorus. In hypo-acidity, slow passage of gastric contents. Again, from an ulcerated surface the afferent stimuli for the reflex might conceivably be very much stronger than from a sound surface. This would lead to a more pronounced end result. The strongly marked spasm of the circular fibres, leading to a well marked incisura in a case of gastric ulcer, suggests increased stimulus and increased end effect. The stimulus arising from a duodenal ulcer should also increase reflex activity. The end result should be marked. That this is so is proved by the strengthened peristalsis and pyloro-spasm. Now where there is pyloro-spasm there is greatly increased tension; where tension is greatly increased pain is experienced. The cause of the gastric pain then, in appendicitis, gall-bladder disease, duodenal ulcer, etc., is increased tension, which must result from the pyloro-spasm. This spasm may be relieved by an antispasmodic, such as belladonna (the effect of the belladonna would be increased by the addition of bromide). The administration of these two drugs will often times give great relief, and especially are they to be recommended in those cases of pyloro-spasm where the underlying cause of the spasm is an irritable state of the nervous system. The relief of pyloro-spasm may also be obtained by the exhibition of alkalis, the time-honoured remedy for indigestion. Alkalis, acting as they do by neutralization of the acidity of the gastric juice, remove or diminish the stimulus for the reflex, one of whose end results is spasm. The old idea that alkalies promote a flow of gastric juice and so aid digestion is probably incorrect; on the contrary, all the evidence seems to show that they retard gastric secretion.

References.

[1] Hertz—"Sensibility of the Alimentary Canal."
[2] Sherrington—*Brain*, Vol. 38, Part 3.
[3] McKenzie—"Diseases of the Heart."
[4] Cannon—"Mechanical Factor in Digestion."
[5] Bayliss—"Principles of Physiology."
[6] McKenzie—"The Interpretation of Symptoms."
[7] Starling—"Recent Advances in the Physiology of Digestion."
[8] Sherrington—"The Integrative Action of the Nervous System."

Reports of Cases.

A CASE OF MUSCULAR ATROPHY.[1]

By **F. Howson, M.R.C.S. (Eng.), L.R.C.P. (London),**
Major, Australian Army Medical Corps; Specialist in Neurology, First Military District.

Mrs. B., aged 28 years, married, with two children, the youngest of whom is eight years of age, had never experienced a day's illness previously in her life. She has had no miscarriages. The history of her ailment shows that fifteen months previously, in March, 1917, she noticed stiffness in her fingers while playing the piano. This stiffness appeared first in the index finger of the right hand. Later she observed some weakness in the muscles between the thumb and index finger of the right hand. The muscles of this hand gradually wasted and lost their power, so that the fingers became flexed and could be no longer straightened voluntarily. This condition was reached in August, 1917, that is, five months after the first signs of illness. The left hand remained unaffected until February, 1918, when similar changes occurred in the muscles, but there was no flexion of the fingers.

On examination the right hand exhibits atrophy of the *abductor indicis*, *interossei* and *lumbricales* muscles, with marked flattening of the thenar and hypothenar eminences. The muscles showed the fibrillary contractions so characteristic of the disease. The whole hand is an example of *main en griffe*. The left hand shows the same condition, but the changes are less extensive. This hand is an example of *main singe*. There was slight wasting of the deltoid and scapular muscles on the right side. On electrical examination there is present no reaction of degeneration, but there is diminished irritability to both faradic and galvanic stimulation. Both epicritic and protopathic sensibility appear to be normal. The knee-jerks are increased, ankle clonus is present, while Babinski's test shows that the pyramidal tracts were involved. The condition was diagnosed as one of amyotrophic lateral sclerosis.

In making a diagnosis it should be remembered that there is no fibrillary contraction in muscular dystrophy, in which condition there is apparent hypertrophy of the muscles, the tendon reflexes are diminished and the patient is usually of younger age. In wasting due to paralysis of the ulnar nerve the first and second *interossei* muscles escape. Sensory changes are also seen in the little and ring fingers. In wasting due to neuritis sensory symptoms are present, and some history of an exciting cause is obtainable. In syringomyelia protopathic sensation is lost and trophic symptoms are present.

[1] Read at a Meeting of the Queensland Branch of the British Medical Association on June 7, 1918.

FRAMBŒSIFORM SYPHILIDE.[1]

By W. McMurray, M.D.,
Honorary Physician for Diseases of the Skin, Sydney Hospital,
and
Langloh Johnston, M.B., Ch.M.,
Honorary Physician for Diseases of the Skin, St. Vincent's Hospital, and Honorary Assistant Physician for Diseases of the Skin, Sydney Hospital.

S.L., aged 49, a Dalmatian, residing in this country for the last fourteen years, gives a history of having coitus four months ago. There are two abrasions on the penis, one on the dorsum of the balno-preputial fold, and the other on the frænum. The glands in the groin are not affected, but the glands in the axilla are enlarged. On the chin there are three sessile tumours, the largest being the size of a shilling. Two partly coalesce and project abruptly about a quarter of an inch above the surface. The surface of each is light red colour, granular and devoid of hair, except at the margin, where it is loose. The tumours have attained this size in six weeks. In the mouth at the commissure of the lip on the left side is an ulcerated surface and a mucous patch is present under the tongue. There are no other syphilides in any other part of the body. Spirochætes have been sought for, but none have been found. The Wassermann reaction is positive.

This form of syphilis is rare in this country. This is the reason why we publish the case.

Reviews.

THE HODGEN SPLINT.

When we consider that a large percentage of the wounded cases in the great war are of an orthopædic character, it is only natural to expect a great variation in the appliances designed to produce limb extension or immobility. This work[2] is written to bring more generally before the notice of the medical profession the advantages of an apparatus known as the "Hodgen iron cradle extension suspension splint," designed originally by Dr. John T. Hodgen for the treatment of compound fractures of the femur during the American Civil War. Its aim is to effect in the treatment of fractures of the thigh not only extension and immobility, but suspension as well. By means of suspension, since the limb is left mobile at the hip-joint, the freest movements of the patient and the limb are permitted, which is especially valuable in the case of the aged. With the splint applied the patient can sit up and move and turn about in bed with freedom. The true Hodgen splint consists of a wire frame, made usually of ⅜ inch (9.5 mm.) soft iron rod, which extends from the perineum to three inches (7.6 cm.) below the foot, transversely across the foot for four to five inches (10.2 to 12.7 cm.), and then along the outer or lateral side of the limb as high as the great trochanter of the femur. The stems are connected by an arched piece of the same metal over the front of the thigh in its upper third, and a flexion angle of 25° is allowed at the knee. The limb rests on slings of domestic bandage about three inches (7.6 cm.) wide and embrocated one-half, so as to give a smooth, even support from the heel to the perineum. Extension is made by means of adhesive plaster attached to the cross bar below the foot. Hooks for the attachment of the suspension cords are placed midway between the knee and the distal and proximal ends of the splint stems on both the inner and outer sides. The cords from these four hooks are attached "from a high point at the necessary inclination to make suspension and proper extension." The ceiling of the room may be used as a suitable point for suspension, although the suspending pulley may be fixed to a support attached to the bed. Furthermore, various modifications of the splint may be made in the treatment of fractures of the upper extremity, either the wire straight Hodgen splint or the variety angled at the elbow. Suspension is effected in a similar way to that made when suspending the thigh. Any desired amount of abduction is secured by the point from which the pull is made in relation to the bed. To the surgeon in Australia, where, owing to the foresight and genius of Peter Bennie over thirty years ago, the principles of conservatism advocated by H. O. Thomas were introduced, the question will naturally suggest itself as to the greater suitability of this splint over the Thomas knee splint, either the bed pattern or the walking caliper into which the bed variety can be so readily converted. The Thomas knee splint, it must be remembered, is the splint of all others most extensively used in the great war. In our opinion, any advantages claimed for the Hodgen splint can be secured by the simple Thomas knee splint, but the reverse would not obtain. The statement of the author, that the Jones' modification of the Thomas' double frame for abduction scarcely removes it from a classification under "instruments of torture," is surely based on ignorance, both of the principles and mathematics of this splint, which a study of Bennie's book on the subject would quickly remedy. We would remind Dr. Nifong that no splint so far introduced has done more for conservation in the treatment of bones and joints than the "double Thomas" splint.

[1] See illustration upon page 305.

[2] The Hodgen Wire Cradle Extension Suspension Splint, by Frank G. Nifong, M.D., F.A.C.S., with an Introduction by Harvey G. Mudd, M.D., F.S.C.S.; 1918. St. Louis: C. V. Mosby Company: Royal 8vo., pp. 162, with 124 illustrations.

MEDICAL DISEASES OF THE WAR.

In the present war the physician has been compelled to recast his ideas concerning certain diseases which have been ruthlessly disabling in previous campaigns, for instance, enteric fever, dysentery and tetanus; also, to learn the diagnosis and treatment of a series of extraordinary neuroses and some physical diseases with which previously he has been wholly unacquainted. In so preparing himself he has had to depend upon either first-hand experience or information gathered from scattered publications. Major Hurst now comes to his assistance by providing under one cover[1] an account of all the medical diseases and disorders pertaining to modern war.

The first half of the book is devoted to war neuroses. Concerning mutism, deafness and other disorders which are undoubtedly hysterical in nature, he says that one unfailing feature is their production by suggestion, which is in accordance with the teaching of Babinski. "In the dazed condition which results from mental strain a man is abnormally suggestible; as he gradually comes to himself he tends to exaggerate and perpetuate the difficulties he experiences in the performance of the various functions of the body. The absence of movement due to the absence of initiative leads to the suggestion of paralysis, the silence due to absence of any stimulus to speak, in his confused state, suggests mutism, and the inattention which prevents him hearing what is said to him suggests deafness." A state of anæsthesia may even be suggested by the medical examiner. And just as all these conditions are brought on by suggestion and kept alive by auto-suggestion, so are they curable by suggestion or persuasion. Major Hurst goes so far as to say that hysterical symptoms should rarely persist for more than 24 to 48 hours after admission to a base hospital. Some of his cures read like miracles. The following case is illustrative. A man who had been deaf for five months, and in whom, by way of preliminary measures, ordinary persuasion, suggestion and hypnotism had failed, was induced to undergo an operation, which he was told would certainly cure. He was given sufficient ether to make him sleep, and an incision was made behind one ear, a plate of iron being continuously hammered at the same time. He left the table able to hear quite well. Like many other of Major Hurst's patients, he was discharged to duty, but we do not get the sequel, which probably was a prompt recurrence of the disability.

In the second half of the book dysentery, trench fever, paratyphoid fever, epidemic jaundice, tetanus, war nephritis, soldier's heart and gas poisoning are dealt with, and the chapters on dysentery, trench fever and tetanus may be specially commended.

Although Major Hurst tells us that, prior to the war, he bore a German name (Hertz), no fault can be found with his English composition; moreover, he possesses the virtue of being able to write succinctly. Further, most of the subjects treated bear the print of experience, gained in the Mediterranean, where he formed one of a commission, and at Netley Hospital, where he had charge of the neurological section, and, at the same time, the work of others receives considerate quotation. The fact that the book has run to a second edition proves that it has filled a want.

[1] Medical Diseases of the War, by Arthur F. Hurst, M.A., M.D., F.R.C.P.; Second Edition, revised and enlarged; 1918. London: Edward Arnold; Demy 8vo., pp. 319, illustrated. Price, 12s. 6d.

The Medical Journal of Australia.

SATURDAY, OCTOBER 12, 1918.

The Potential Criminal.

The subject of the recognition of the arrest of cerebral development in early life has been dealt with in these columns of many occasions. It has been pointed out that there are but few individuals who have the necessary knowledge and training to detect mental deficiency in all its forms and that, in consequence, crimes are committed and the perpetrators punished or liberated without a suspicion being raised that the deeds were the products of a partially developed brain. Hitherto the legislature in almost every State in the world has misunderstood the problem and has applied illogical and inefficient remedies. The mentally deficient have been regarded as persons closely allied to the insane. Provision has been made for the idiot and the imbecile, often in association with the insane, while the high-grade moron has remained undiscovered. Governments have delegated the duty of looking after the mentally deficient to the departments of education, because idiocy and imbecility are manifest in childhood. It has been nobody's duty to safeguard the community from the irresponsible behaviour of these unfortunate people after puberty is reached. Moreover, the significance of the problem and the obligations of the State have been wholly misinterpreted.

In the present issue we publish the first part of an able article by Dr. P. Lalor on this important subject. The time has arrived for plain speaking and for the removal of all misconceptions. The public must be informed that mental deficiency and insanity have nothing in common. The insane suffer from diseases of the mind, pathological processes which vary in intensity, in course and in amenability to curative treatment. Mental deficiency means nothing more or less than an arrest of brain during the process of development and the endowment of the individual for the remainder of life with the mentality of a child. When the cerebral development does not proceed far, the mental defect is obvious. The speech centres, the centres for word comprehension, for co-ordination and for purposeful action may be imperfect, and the individual remains a babbling idiot, incapable of proper speech and natural, decorous behaviour. The mind of a child of one year of age in the body of an adult cannot be overlooked. When the arrest of development takes place later, the intellectual defects become less obvious. It requires a trained expert to recognize in a child of fourteen a defect equivalent to two years' retardation. It should be universally known that the individual whose mental processes are as immature as those of a child of ten or twelve years, will not behave as normal adults have throughout life. As the animal passions, which are not involved in the process of arrested development, mature, and as the muscular power of the individual strengthens, he forms a menace to the public safety. Unchecked by the restraining influence of education, uninfluenced by a fully awakened sense of ethics, the actions of such a person are guided by impulses. These impulses owe their origin in sexual appetite, in bad example, in sudden ideas and in the effects of circumstance. Unnatural offences, prostitution, murder, thefts, unseemly behaviour, idleness and refusal to work, and foolish acts, often followed by disastrous consequences, arise in this way. Nothing that can be done, even at an early age, can alter the mental development of the individual. When the deficiency is established, all that can be done is to train the individual to perform useful tasks and to protect him or her from the results of their mental childishness.

When these facts are recognized by everyone, the State will awaken to a sense of its responsibility, not only to those unfortunate individuals, but also to the community as a whole. It will then be recognized that crimes and prostitution born of mental deficiency must be prevented. No one will challenge the economy of a successful action of this kind. The cost of the upkeep of prisons, the waste due to venereal disease, to alcoholism, to drugging, and the charge to the State on account of the obvious idiots and imbeciles represent an immense sum of money each year. It would be a large national saving if proper asylums were set up for the control of the mentally deficient, who are said to represent about 5% of the total population. The prevention of propagation would effect a

rapid diminution of these defects. Before steps can be taken to reduce the crime and cost arising from mental deficiency, it is necessary for Australia to train large numbers of persons in the recognition of the high-grade moron. We have already suggested that the first training school should be placed under the direction of Professor Berry and Mr. S. D. Porteus, whose ingenious and important work in this connexion is being forcibly brought to the attention of the public. General interest must be awakened, and, with this end in view, it would be advisable if an inter-State conference on the subject were convened. At this conference the practical questions of ways and means, of the best situation for the first training school for psychologists and of whether the Federal Government should be asked to take an active part in this national task could be carefully considered. Experienced men and women could instruct the uninitiated at this conference, and the sympathy and co-operation of the press could be enlisted. The matter is of such great national importance that delay is inexcusable.

THE RESEARCH WORKER.

Modern medicine is characterized by a spirit of investigation. Each year sees an extension of the army of laboratory workers and research students who devote their energies to the unravelling of some problem connected with disease. The progress which has been made in medical science is largly due to deliberately planned and carefully conducted enquiries into the physiology of the body in health and in disease and into the ætiology of disease. The qualities of a research worker embrace imagination, ingenuity, resource and power of observation. Not every one is endowed with these qualities, and, consequently, not every student who enters the laboratory is suited to the work. Long training in technical methods and hard reading are essentials for success in this sphere of activity. Experience teaches that the proportion of medical students who possess the ability, inclination and opportunity for undertaking this work is relatively small. Since good research work cannot be expected from the amateur or from the man devoting a year or two before settling down in practice, it is in the interests of the science of medicine and of the community that everyone gifted in this direction should be secured for the laboratory and adequately trained by competent teachers. Within recent years large sums of money have been devoted toward the equipment and upkeep of excellnt institutions and laboratories. Without lavish endowment, these institutions would have been of small practical value and the extension of research work would have become impossible. In Great Britain the establishment of the Lister Institute of Preventive Medicine and of the research laboratories connected with the Universities, has marked an important era in the history of medicine. Another significant movement was the setting apart of one penny per insured person under the *National Insurance Act* for the purposes of research. The tendency in the old country has been to employ as many research workers at the various laboratories as could be obtained, and to pay them small salaries for a short series of years. Only a few positions carrying relatively good remuneration exist at the present time. The result has been that the majority of workers, as they were becoming proficient, have been compelled to relinquish their work for some more profitable occupation. In Australia, research workers are almost limited to the holders of Rhodes scholarships and to a few teachers and public officials, who can find some spare time to devote to original investigations. It is obvious to all that the attraction of the laboratory is the fascination of the work, not the remuneration or the prospect of a good living. Those who spend some time working in a laboratory soon discover that the fruits of their labours are gathered on the tables of others. The ethics of the medical profession require that every fact elicited by a research worker must be given to the world. There may be no secret. The discovery of the cause of a disease or of a remedy brings no tangible reward to the discoverer. Neither the practitioner who applies it for gain to a patient, nor the patient who benefits by the application of the knowledge acquired in the laboratory recompense the research workers. The more or less rare qualities necessary for the work, its low remuneration and the fact that success does not command a financial reward militate to keep the number of workers at the lowest ebb. In the reforms which are approaching, a recasting of the position of the laboratory worker must find a place. Australia has men with capability and other essential attributes, and it is eminently desir-

able that these valuable assets should be utilized for the advancement of science. Provision must be made to render the laboratory attractive and remunerative to the gifted man. No one can tell whether a potential Lister or Pasteur is not being wasted because of the lack of opportunity. Since the economic value of science is being recognized more freely every day, economists should realize the necessity of dealing liberally with the working scientist.

THE TREATMENT OF DYSENTERY.

Emetin, the active principle of ipecacuanha, is the remedy mainly employed for the treatment of dysentery resulting from the presence of *Entamœba histolytica* in the intestinal canal. In the typical forms of this disease relief of the symptoms occurs promptly after the exhibition of this drug. Cure is, however, often only apparent, since recurrence of the disease takes place after a few months in a high percentage of patients. Much effort is being expended at the present time upon attempts to discover more effective ways of administering emetin. Experiments have, also, not been lacking to find a better remedy for amœbiasis. It has long been known that plants of the family *Simarubaceæ* have been used in many tropical countries by native races in the treatment of intestinal disorders. As far apart as China and Mexico closely allied species of this family have been selected for internal medication, and have enjoyed favour for their efficacy in combating intestinal disturbance. In 1893 J. W. Nixon related from Texas the histories of three patients in whom *chaparro amargosa,* a Mexican plant long employed by the natives, had cured amœbic dysentery. Two years later West recorded seven cases in which the symptoms were relieved in a similar manner, and in which the amœbæ disappeared from the stools. In 1914, 1915 and 1916 S. I. Nixon made known in a series of publications the results of much careful observation upon the administration of this "bitter bush." In dysenteric patients the immediate effects were rapid relief of the symptoms. The response was so rapid that the patients received, on the average, treatment for two days before the stools became normal. These patients presented characteristic clinical histories, and the diagnosis was confirmed by microscopical examination of the fæces. Nixon employed a decoction made by boiling the root, branches, leaves and fruit in water from 30 to 60 minutes. The strength of the decoction was adjusted so that it possessed the colour of weak tea. At this strength it was given *ad libitum* without nausea or any untoward symptoms. In practice, Nixon ordered 200 c.cm. (six to eight fluid ounces) four times daily by the mouth and one-half to two litres twice daily *per rectum,* the enemata to be retained where possible. Out of twelve patients who were watched after discontinuing the treatment and subjected to periodical examination, two relapsed, six had remained well for over two years at the date of publication, two had been free from amœbæ for one year and two for three months. One patient who had remained infected after the administration of emetin for several months was freed from amœbic infection by *chaparro amargosa.*

An extended investigation of this remedy has been made[1] by A. W. Sellards and M. A. McIver in the School of Tropical Medicine, Harvard, and the Massachusetts General Hospital. The plant has been identified by J. W. Nixon as *Castela Nicholsoni.* This identification has been accepted by the Boston research workers, though other species of *Castela* have been recorded from Northern Mexico. The material that was made use of in this study comprised dried stems and branches shipped from Southern Texas. A portion was supplied by J. W. Nixon, to whom the plant was well known. It appears unfortunate, as Sellards and McIver remark, that no other parts of the plant were included in the material for investigation, so that an accurate botanical identification of the source of this material could be established. It is quite possible that twigs and branches of other species of *Castela* were included, and that the research has been performed upon a mixture of material from several closely related species or varieties. Much labour would have been saved in the past if those examining vegetable medicinal substances would take sufficient precautions to ensure that their study has been carried out upon the tissues of the plant of which the name is employed. Frequently the material has been derived from several different species. The importance of adequate care in this direction is apparent from the labours of R. T. Baker and H. G. Smith upon the oils from different species of *Eucalyptus.*

The clinical effects of the crude drug were tested in Boston by administering infusions after the manner of Nixon to four adults and one child. In the case of the adults the recovery was prompt. One patient shows an instructive history. The disease was present in a moderately acute form, and failed to yield to fourteen daily injections of 0.06 gm. emetin. The patient passed three or four stools a day, with a little blood and mucus. Amœbæ were present sparsely in the stools. After ten days' treatment with *chaparro* the symptoms subsided and the amœbæ disappeared. Much attention was given by these investigators to the chemical examination of the material. It was hoped that the active principle might be isolated, so that the drug might be concentrated and obtained in a relatively pure form permitting of accurate dosage. It was also hoped that a study of the constitution of the active principle might make it possible to test a number of similar substances. An extended analysis of the material led to the separation of a product which appears to be a glucoside or similar compound. It reduces Fehling's solution, especially after hydrolysis with hydrochloric acid. Its most characteristic chemical feature was a pronounced colour reaction with sulphuric acid. A blue colour appeared, which changed to purple and later to brown. The substance that was separated was found to be toxic for small animals. This product has been tested among three patients suffering from acute typical amœbic dysentery. The patients received one gramme of the powder three times daily at the beginning of meals. No other treatment was adopted. On the second day of treatment two of the patients improved. On the fifth day of treatment a thorough examination of the fæces failed to reveal amœbæ. Some days later purging

[1] *Journ. Pharm. and Exper. Therapeutics,* Vol. XI., p. 331, May, 1918.

yielded copious stools free from *Entamœba histolytica*. An interesting history is given of the third patient, who had been treated twice previously for acute attacks with emetin. Recovery had been prompt, but recrudesence had occurred after several months. The patient was given emetin intramuscularly and *chaparro amargosa* by the mouth and rectum. The attack subsided and no symptoms were experienced. Monthly microscopical examination of the fæces showed no amœbæ for nine months, when the protozoa appeared in moderate numbers. Three examinations at weekly intervals showed the amœbæ on each occasion. The product separated from the *chaparro amargosa* was given in doses of two grammes thrice daily. After the fifth dose there was nausea, headache, and slight diarrhœa. In a few hours these symptoms had passed away. The stools became free from amœbæ and have remained so for some time.

The most valuable portion of this research would appear to be the demonstration of the fact that infections which do not yield to emetin yield to *chaparro amargosa*. A strain of *Entamœba histolytica* which is resistant to one of these drugs does not seem to be resistant to both of them. What percentage of relapses will occur after this treatment can only be determined by long-continued observations extending over some years. It would not be wise to be too sanguine as to the efficacy of the remedy in regard to relapse. The amœbæ are prone to encyst in the tissues. The motile form is readily killed by agents of low amœbicidal power, but the encysted form is found to be resistant *in vitro* to strong solutions of many agents deleterious to the motile form. The cysts seem to lie dormant and viable in the human body for long periods.

THE NEUTRALITY OF SOLUTIONS OF SODIUM HYPOCHLORITE.

A solution of sodium hypochlorite has long been known as a powerful antiseptic and germicide. Such a solution can, however, exhibit distinct disadvantages. Unless the solution shows an alkaline reaction, it will be liable to decompose, liberating hydrochloric acid. Within certain limits, the greater the degree of alkalinity, the better will the solution of sodium hypochlorite keep. The solution of sodium hypochlorite, when alkaline in reaction, is irritant to the tissues. H. D. Dakin observed that, by adding boric acid to a strongly alkaline solution of sodium hypochlorite until the liquid was no longer coloured on the addition of powdered phenolphthalein, he could prepare an antiseptic solution of considerable stability and of slight irritating effect upon the skin and tissues. Daufresne modified this method of preparation by using sodium bicarbonate in place of boric acid, but he still used powdered phenolphthalein as the test for the reaction of the solution. These solutions have frequently been described, somewhat loosely, as neutral solutions of sodium hypochlorite. The liquids are, however, not strictly neutral, since the end-points of the indicators employed for testing the reaction in solutions of hypochlorites are quite different from the end-points of the same indicators in ordinary solutions. This difference arises from the bleaching action of the hypochlorite radicle. A greater alkalinity is required to give a colour with powdered phenolphthalein in the presence of hypochlorites than in their absence.

Since the alkalinity of these solutions of sodium hypochlorite increases their stability, their irritating effects upon the skin and tissues and their solvent action on necrotic material, it has seemed desirable to G. E. Cullen and J. H. Austin[1] to define as accurately as possible the concentration of hydrogen ions indicated by various end-points in these antiseptic solutions. These investigators have carried out this work in the laboratories of the War Demonstration Hospital of the Rockefeller Institute for Medical Research. They have made use of three indicators, powdered phenolphthalein, 1% alcoholic solution of phenolphthalein and 0.1% alcoholic solution of ortho-cresolphthalein. Their investigation has taken the path of the preparation of a series of solutions of sodium hydrate and of sodium carbonate of increasing strengths, into which chlorine gas has been passed until the end-point of each of the indicators has been reached. Determinations of the amount of chlorine in each solution at the end-point have been made by titration with a solution with a standard hyposulphite solution. Since the alkalinity of a solution of sodium hydrate or of sodium carbonate is diminished with the introduction of more and more chlorine, the change in the hyposulphite titration is a gauge in the change of concentration of the hydrogen ion. By suitable means the investigators have determined the composition of the neutralized sodium hypochlorite solutions at different concentrations. The most important result of their study is the demonstration that the reaction of a solution of sodium hypochlorite at the end-point of any particular indicator varies with the strength of the hypochlorite solution. They find that the end-point in a 0.5% solution of sodium hypochlorite, as determined by powdered phenolphthalein, is at an hydrogen ion concentration of about 10.1. In such a solution the hypochlorite is present entirely as a salt of sodium. The end-point to ortho-cresolphthalein in a solution of sodium hypochlorite of the same strength is at a hydrogen ion concentration of 9.3, while with a 1% solution the concentration is 9.7. In these solutions from 7% to 17% of the total hypochlorite is present as hypochlorous acid. This solution, which is less alkaline and less irritating to the tissues, is sufficiently stable for clinical use. From these results the investigators conclude that solutions of sodium hypochlorite, such as are used in clinical work, *e.g.*, Dakin's solution or Daufresne's solution, are strongly alkaline in reaction when prepared so as just to fail to colour powdered phenolphthalein. A truly neutral solution, as indicated by alcoholic phenolphthalein, would contain such a proportion of hypochlorous acid as to be quite unstable and unsuitable for clinical use. The degree of alkalinity of a solution which has an hydrogen ion concentration between the end-points of powdered phenolphthalein and ortho-cresolphthalein is what is most suitable for surgical purposes. From the practical point of view, these investigators have shown that solutions of a definite reaction can be obtained by starting with a sodium carbonate solution of a known strength and passing chlorine until a definite

[1] *Journ. Biol. Chemistry*, Vol. XXXIV., p. 553, June, 1918.

quantity of chlorine, as measured by standard hyposulphite solution, has been introduced. They suggest that chlorine should be passed into a solution containing 14 gm. of sodium carbonate to the litre (13.2 molecules per 100 litres) until titration with standard hyposulphite solution shows that there is a concentration of sodium hypochlorite of 0.5%. Such a solution has proved most satisfactory for clinical purposes in the War Demonstration Hospital. The limits of the range of hydrogen ion concentration in sodium hypochlorite solutions which are suitable for clinical use lie from 9.3 to 10.1.

CRYPTOPLASMIC INFECTION.

The failure to detect a bacterium, protozoön or fungus in certain infective processes has led to the formulation of several theories, some of which are fantastic, while others are plausible. In certain lesions no visible micro-organism can be detected with the aid of the modern microscope, but since the process can be induced in animals by the injection of the tissue fluid after passage through a porcelain filter, the assumption is justified that the causal organism is a body of such small dimensions as to remain invisible, even when sought by means of a microscope capable of magnifying objects one or two thousand times. In other instances the thesis has been set up that certain minute bodies, usually regarded as low forms of vegetable life, undergo changes within the tissues of a host and give rise to pathological lesions when present in some suppositious forms. Enthusiastic investigators have on several occasions allowed imagination to run riot, and have depicted and described extraordinary forms of recognized micro-organisms, and have ascribed special disease-producing qualities to certain of these alleged forms. Unfortunately, more critical observers have failed to reproduce anything approaching these bodies.

A very ingenious hypothesis has been enunciated recently by Dr. H. W. Wade, of the Biological Laboratory of the Bureau of Science in Manila.[1] He has set himself the task of finding an explanation for a series of hitherto unclassified chronic ulcers which occur in the Philippine Islands. The lesions apparently contain neither bacteria, nor protozoa, nor fungi. He is satisfied that they are not syphilitic, nor frambœsic, and that there is no evidence of a Leishmanian causation. Notwithstanding the entirely negative findings, he endeavoured to follow out a cultural study of the lesions. On ordinary media bacterial overgrowth rapidly led to the degeneration of the tissue elements. On nutrient banana-agar or nutrient prune-agar the leucocytes in the tissue underwent a very extraordinary change. The nuclei became solidified in the manner of hyalinization. The staining became more intense, and, after a time, oval or rounded bodies appeared, which Dr. Wade regarded as parasitic fungous elements. Further cultural experiments led to the growth on two occasions of *Cryptococci*. The definite characters were not developed for many weeks. He claims that the most reasonable explanation of the source of the *Cryptococci* is that of the basic bodies observed in the fragmentation of the leucocytic nuclei. He discusses the possibility of the fungus being a contaminant, and gives valid reasons for dismissing this objection. It is unlike any described yeast strain, and he emphasizes the fact that it is totally unlike any fungi contaminating other cultures in his laboratory. He gives full descriptions of the appearances of these bodies in the cultures, and endeavours to trace a parental relationship from the basic bodies.

These observations, together with others to be published at a later date, form the basis of his hypothesis. He suggests that a differentiated parasitic element in a mycotic lesion may give rise to a derivative substance, morphologically undifferentiated, and possibly amorphous. This substance, which may be soluble or insoluble, is more or less viable and may be capable of persisting or even of increasing. He names the hypothetical substance "cryptoplasm." It may be introleucocytic, and within the leucocyte it may exert definite influences on the cell contents. He imagines that if it replaces its formed generator, all attempts to demonstrate a causal organism of the lesion must fail. It would therefore be impossible to apply the test of Koch's postulates in these cases.

From a theoretical point of view, it is impossible to deal conclusively with an hypothesis of this kind. Confirmation of the curious phenomena described is needed in the first place. In the next place, other conditions must be described in which a parasitic element can be coaxed into being, after its absence in the tissue cells has been demonstrated. Chemical evidence of the hypothetical cryptoplasm should be sought. Dr. Wade's further contributions should be highly interesting.

[1] *The Philippine Journal of Science*, Section B, Tropical Medicine, Vol. XIII., No. 4, July, 1918.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

A meeting of the Senate of the University of Sydney was held on September 2, 1918, at University Chambers, Phillip Street, Sydney.

The following degrees were conferred: In person—Ch.M., F. J. Jensen, M.B. *In absentia*—Ch.M., A. Howard, M.B.

On the recommendation of Acting-Professor Cotton, it was resolved that Messrs. W. R. Browne and L. L. Waterhouse be permitted to become Honorary Members of the State Geological Survey of the Broken Hill Lode.

A letter was received from Lieutenant P. V. Storkey, V.C., acknowledging the congratulations of the Senate on the award of the Victoria Cross.

The Warden reported the receipt from Mr. G. C. Saxby of the sum of one hundred and fifty pounds for the foundation of a prize in Mathematics I. for engineering students, in memory of his son, Kenneth K. Saxby.

A letter was received from the Secretary to the Premier, stating that, in connexion with the visit of the French Mission to Sydney, the visit to the University had been fixed for Tuesday, the 1st of October.

On the motion of the Vice-Chancellor, Dr. Sydney Dodd was re-appointed Lecturer in Veterinary Pathology and Bacteriology for a further term of seven years from the 31st of December.

The following Board of Examiners were appointed for the M.D. Examination in Biology: Sir Thomas Anderson Stuart, Professors Wilson, Welsh, Chapman, Johnston and Haswell (professor emeritus).

Abstracts from Current Medical Literature.

DERMATOLOGY.

(119) Röntgen Diagnosis of Diseases of the Chest.

George C. Johnston (*Amer. Journ. of Röntgenology*, July, 1918) discusses the various lesions in which radiography is useful as a diagnostic method. Pneumonia, pleurisy and malignant disease are now being more generally investigated by X-rays, and the author describes the appearances of these various lesions. In the diagnosis of pulmonary tuberculosis Johnston once more emphasizes the necessity of correlating the clinical and X-ray findings. Only the most advanced cases can be diagnosed by X-ray examination alone, but when the X-ray findings are taken in conjunction with the physical signs, temperature, weight record, etc., they may acquire great significance and may clinch the diagnosis. No shadow of an habitation peculiar to the tubercle bacillus is found in the skiagram, and the so-called "fan" of Dunham is merely the appearance of any low-grade, inflammatory process, which extends by continuity of mucous membrane. The degree of activity of a lung lesion may be determined by the distinctness of its outline or limiting margin. If the outline of the pathological shadow is sharp the lesion is old and quiescent, but, if the margin is hazy, blurred and indistinct, the lesion is active. Dense shadows, with sharp outlines and demarcations, are always due to healed lesions. In regard to peri-bronchial tuberculosis in children, with enlargement of the hilus glands, Johnston points out the difficulty of diagnosis from any acute simple bronchitis or broncho-pneumonia, conditions which are always accompanied by enlargement of the bronchial glands. Heart lesions are briefly dealt with, and stress is laid on the danger of the "transverse" heart. In the diagnosis of aneurysm, expansile pulsation should always be noted and tumours with transmitted pulsation should not be mistaken for aneurysms.

(120) Folliculitis Ulerythematosa Reticulata.

George MacKee and Mihran Parounagian (*Amer. Journ. Cut. Dis.*, June, 1918) describe two cases of *folliculitis ulerythematosa reticulata*. Both commenced in childhood, and have continued over a number of years. They were characterized by the presence of comedones, erythema and pitted scars, appearing almost simultaneously, but there were never present at any time pustules, vesicles or papules. The eruption was limited to and symmetrically distributed over the greater portion of both cheeks. It was composed of numerous, closely crowded, pit-like atrophic areas, separated by narrow ridges, which produced a reticulated, honey-comb or network appearance. Comedones were present, both in the depressed atrophic areas and in the ridges, whilst the latter also contained a number of milium-like bodies, and, on close inspection with a lens, small, follicular, horny plugs could be observed. The affected area was erythematous, with a distinct line of demarcation between it and the normal skin. Recently a slight spontaneous improvement has occurred, with a diminution in the number of comedones, and in one of the cases with a lessening of the erythema and a flattening out of the reticulated ridges. Tissue was obtained for pathological examination from both patients, and the microscopical sections disclosed marked alterations in the hair follicles, together with a large number of cysts which had been derived therefrom. There were numerous, acanthotic, enormously dilated follicles, filled with horny material. The large hair follicles showed marked tortuosity, and the cysts could be ascribed to cross and tangential sections of these follicles. The most marked changes in the derma were to be observed in the collagenous tissue, which showed œdema, degeneration, and, in places, disappearance of the collagenous bundles, this being most noticeable in the immediate vicinity of the vessels. The cause of the atrophy was, at least in part, due to this degeneration of the collagen. Cases of a similar nature have been recorded by Pernet, under the title, *atrophoderma reticulata symmetrica faceiei*, but in that case there was no mention of comedones. Possibly those cases recorded by Unna as *ulerythema acneiforme*, and by Heidingsfeld as *atrophia maculosa varioloformis cutis* were of the same nature. The authors have designated the condition *folliculitis ulerythematosa reticulata*, because, histologically, and also clinically, the condition is a folliculitis, ulerythema denoting erythema with scarring, and *reticulata* being descriptive of the essential clinical network.

(121) Angiokeratoma and Multiple Telangiectases.

H. G. Adamson discusses the multiple small agiomata, including angiokeratoma and multiple telangiectases (*Brit. Journ. of Dermatol. and Syphilis*, April to June, 1918). He draws attention to the fact that angiokeratoma may be widely distributed, and states that the warty condition found in cases where this complaint is limited to the hands and feet appears to depend upon purely local causes, that it is a secondary and accidental feature, and is slight or altogether absent when the affection occurs on other parts of the body. Some aberrant types of angiokeratoma have been described, showing a distribution on the trunk, the limbs and the scrotum. They are to be diagnosed from the spider-like *nævus araneus*, from the so-called De Morgan's spots, which not infrequently occur in elderly people, and from segmental nævi, composed of small angiomata and occurring over a limited area of the trunk or limbs. Still more important is the diagnosis from the Osler type of multiple telangiectases, the latter being differentiated by its distribution, by its associated epistaxis and by it being a familial affection. Histologically, the angiokeratomatous group, whether of the true or aberrant type, differs from the other group in the fact that the blood cysts in angiokeratoma are often situated in the epidermis itself, while in the other forms the dilated blood vessels or cyst-like formations are beneath the epidermis. The most recently published case of the Osler type of telangiectases, namely, that recorded by N. Paul in the *British Journal of Dermatology*, January to March, 1918, is an example of the latter type, for the photomicrograph of a section shows the blood-cysts in the corium beneath the epidermis, but none actually in the epidermis.

(122) Röntgen Study of a Thousand Chest Cases.

E. L. Davis has undertaken a study of the skiagraphic records of 1,000 patients sent for examination by medical officers in a military camp to the X-ray department (*Journ. Americ. Med. Assoc.*, May 25, 1918). All the patients were between the ages of 21 and 30 years. In practically every case the Röntgen ray findings were confirmed by the physicians. Pulmonary tuberculosis was demonstrated in its earliest stage and the author states that, the most definite signs of active disease are soft shadows with mottling, occurring in regions of the lung usually occupied by the normal linear markings. These shadows are due to the presence of tubercles surrounded by areas of congestion. In 53% of positive cases the tubercular infection started in the right apex and 28% in the left apex. In 11% a bilateral infection existed. Negative Röntgen ray findings were reported in 50% of the cases suspected of having tuberculosis. Thickening of the shadows at the hilus was looked upon as indicative of healed, rather than active, tuberculosis. Difficulty in diagnosis was met with in differentiating between tuberculosis and post-pneumonic conditions, but the latter conditions gradually show signs of improvement with time. Two hundred and fifty patients suffering from lobar pneumonia were examined. The following diagnostic points were established: (*a*) There was marked accentuation of the normal linear markings from the hilus to the apex, due possibly to congestion. (*b*) There was an enlargement of the heart shadow; this occurred in all except two cases. The enlargement was partly due to myocardial affection and partly to congestion in the pulmonary system, and it persisted for some weeks. As long as it was present the patients complained of shortness of breath on exertion. (*c*) There were typical shadows of consolidation. (*d*) There was an elevation of the diaphragm on the affected side. An interesting point about these cases of pneumonia was that in 31 cases no consolidation was detected, though a typical pneumonia was present, with definite crisis. From this Davis concludes that pneumonic symptoms are due more to toxæmia than to the extent of the pulmonary involvement. Pleural effusion and empyema were easily demonstrated by X-rays examination, but Davis mentions the necessity of examining the patient in the upright position, if small effusions only are present. Among the

patients examined, 62 were suffering from broncho-pneumonias. The condition, in nearly every case, was unilateral. Peribronchial mottling was noted in these cases, and the heart shadow was not enlarged. Broncho-pneumonia was frequently missed by physical examination. Other lesions met with were odd cases of pneumo-thorax, abscess, empyema, pleural effusion, etc.

BIOLOGICAL CHEMISTRY.

(123) Filtration of Enzymes of Milk.

Jean Picard and M. Rising have endeavoured to separate the enzymes from cow's milk by filtration through different filters (*Journ. Amer. Chemical Society*, August, 1918). Cow's milk, as well as human milk, contains a number of enzymes of unknown origin and chemical constitution. The authors are of opinion that the presence of these substances in the natural food of the young makes it safe to assume that these ferments have important uses, even if their functions cannot, at the present time, be precisely defined. If this assumption be granted, it follows that a sterilized milk containing the active enzymes of milk will possess greater value than a sterile milk from which these ferments are absent. In the artificial feeding of infants in Chicago, boiled "pasteurized" or "certified" milks are employed. Boiled milk contains no ferments, since these are destroyed at temperatures from 72° C. to 80° C.. The milk which is "pasteurized" is heated to 60° C. for 30 minutes. It is not filtered, and contains suspended dirt. There is no certainty that the temperature is sufficient to permit of the destruction of all the pathogenic microbes and their spores. "Certified" milk is obtained by utilizing a series of precautions while milking from the cow and transmitting to the consumer. Such milk contains the ferments, but it also contains numerous bacteria which can multiply readily. The authors are of opinion that a milk sterilized by filtration would be free from microbes and suspended impurities, while any change in the enzymes would be avoided. As a result of a large number of experiments, they have found that no filter which has sufficiently large pores to permit the passage of the colloidal enzymatic bodies arrests the passage of germs. If the micro-organisms are held back by the filter the ferments do not pass through the filter. Attempts have been made to overcome some of the difficulties by removal of the fat to obtain a more convenient fluid for filtration, by filtering the milk serum, by sterilizing the separated fats and by mixing the two sterilized portions. The authors have utilized the Schardinger test for the detection of the catalytic enzyme and have employed this enzyme as the test enzyme. The enzyme is found to remain in the liquid part of the milk when little acid is used to precipitate caseinogen, but the enzyme is thrown down with the caseinogen when more acid is employed for the precipitation.

(124) Proteins in Cerebro-Spinal Fluid.

Lecène, Mestrezat and Bouttier (*C.R. Soc. Biol.*, Paris, June 8, 1918) point out the diagnostic and prognostic value of attention to an accumulation of protein in the cerebro-spinal fluid of those suffering from injuries of the head. Their conclusions are based upon an investigation of 50 patients. In 27 of these soldiers there has been a wound of the brain, with or without an opening in the dura mater, in 18 of the patients there has been a fracture of the vault or base of the cranium, and in five soldiers there has been severe contusion. If there is more or less increase in the amount of protein without diminution in the reducing substances or the chlorides and with no cytological reaction, the signs are those of pure encephalitis, and are most grave. They have been noted in three of the fifty cases. In five patients with penetrating wounds who progressed favourably, the proteins of the cerebro-spinal fluid have been little increased and have not exceeded 0.75 gm. per litre. The figures for the protein have been highest from the third to the ninth day after the injury. In five patients who had died as a consequence of penetrating wounds and who have been examined between the fourth and eighteenth days, the amount of protein in the cerebro-spinal fluid has exceeded one gramme per litre. If sepsis occurs in the membranes of the brain, the amount of protein in the cerebro-spinal fluid is increased still more, and may reach 4.5 gm. per litre. When late complications occur, as abscess of the brain, the protein figure is usually high. In three out of four patients with abscess of the brain the figure has been above 2.5 gm. per litre, but in the fourth it has been only 0.8 gm. per litre. Eleven patients with fractures of the skull, which were followed by changes necessitating surgical interference, have yielded cerebro-spinal fluids with less than 0.7 gm. per litre. The average figure has been 0.35 gm. per litre. The patients have all recovered. In two patients with fractures leading to death the cerebro-spinal fluid contained 1.4 gm. and 2.4 gm. protein per litre. The authors have arrived at the conclusion that the injuries may be regarded as not severe when there is less than 0.5 gm. protein in the cerebro-spinal fluid, and that the severity of the lesion increases as the amount of protein rises above this figure. In those patients in which there is a progressive increase in the amount of protein, the prognosis is particularly unfavourable.

(125) Reducing Power of Cerebro-Spinal Fluid.

Mestrezat, Weissenbach and Bouttier have observed the persistance of the reducing power of cerebro-spinal fluid in the encephalo-meningeal infections of traumatic origin (*C.R. Soc. Biol.*, Paris, June 22, 1918). The diminution or disappearance of the reducing power of the cerebro-spinal fluid is well known in the acute meningites not due to injury. The close association of a lowered concentration of glucose, with the presence of micro-organisms, has led many observers to conclude that a lessened amount of reduction indicates an infection with micro-organisms of the cerebro-spinal fluid. In the course of their examination of cerebro-spinal fluid from patients who had received injuries of the head, the authors have observed that they could demonstrate the presence of micro-organisms in the cerebro-spinal fluid by culture and by direct microscopical investigation. In certain of these cases the reducing power of the cerebro-spinal fluid has not been lessened, but has been three or four times greater than that of normal spinal fluid. Histories are given of the condition of four soldiers who died five, six, nine and thirty-two days after injury, in which the presence of streptococci, diplococci or enterococci was shown in the spinal fluid, while the sugar in the cerebro-spinal was greater than in normal fluids. The authors suggest the presence of an hæmatoma or of disintegrating nervous tissue may lead to the addition of some reducing substance to the spinal fluid. The appearance of this substance may mask the loss of reduction consequent on the micro-organisms utilizing the sugar of the fluid. The authors have only noted this association in cases of acute injury.

(126) Milk as a Source of Water-Soluble Vitamine.

T. B. Osborne and L. B. Mendel discuss the results of their experiments on feeding rats with milk (*Journ. Biol. Chemistry*, June, 1918). These authors had found that it was necessary to add at least 28% of protein-free milk to a ration to maintain the growth of rats. On the other hand, F. Gowland Hopkins found that the addition of quite small quantities of milk to the diets of rats served to promote growth when the ration consisted of mixtures of purified proteins, carbohydrates, fats and salts. Hopkins could show, in a most striking way, the rapid improvement in nutrition on the addition of only 5% milk to the diet. The difference in the growth was so considerable that no doubt could arise as to the efficacy of the addition. Every attempt has been made by the authors to obtain similar results with such small proportions of milk, but without success. They have found that a proportion of 20% represents the minimal amount of milk that will maintain the growth of rats under the conditions of their experiments. They urge that a more liberal supply of milk be allowed in dieting animals and infants as a source of vitamines, until it is established with certainty that the small amounts employed by Hopkins contain all the vitamines necessary for the growth of the organism. The authors have thought that they might obtain a tenable explanation of the quantitatively inferior results of their experiments, owing to the possibility that the manipulations, and particularly the heating, incidental to the preparation of dried protein-free milk, as well as the milk powder, might have produced a deterioration or loss in the vitamine factor. They have therefore fed rats with diets consisting of casein or edestin, starch, lard, butter fat and salts, along with fresh milk. No growth has been observed with less than 2 c.cm. milk.

British Medical Association News.

SCIENTIFIC.

A meeting of the Western Australian Branch was held at the Perth Public Hospital on August 21, 1918, Dr. R. C. Everitt Atkinson, the President, in the chair.

Dr. R. H. M. Jull showed a child with a peculiar warty growth, limited to the left side of the body.

Dr. M. K. Moss read the notes of a case of intussusception operated on by him at the Children's Hospital. At the operation a double intussusception was found; each was reduced. The child made an uneventful recovery.

Dr. R. H. M. Jull read a paper on the methods of medical inspection of school children. We hope to publish this paper in a future issue.

Dr. Atkinson thanked Dr. Jull for her paper, and stated that she was peculiarly gifted for the work of school medical inspection. An interesting discussion followed, in which Drs. Clement, Moss, Ray, Robertson, Cantor and Couch took part.

MEDICO-POLITICAL.

At the same meeting of the Western Australian Branch the President, Dr. Atkinson, stated that a deputation from the War Patriotic Fund had waited on the members of the Council the previous day and had put forward the following suggestions:—

That arrangements be made with the doctors to visit patriotic fund cases at call, payment for the visits to be guaranteed by the fund, special rates to be arranged if possible.

That the beneficiaries be permitted to call the doctor to attend, as necessary, once, notifying the Secretary immediately after the visit has been paid.

That the doctors visiting these cases be asked to notify the Secretary after they have done so on a form to be supplied, and to state whether, in their opinion, a further visit is necessary.

That arrangements be made in the different districts for the supply of medicine on the prescription of the doctor, for which the fund will be responsible.

Dr. R. C. Merewether suggested that if the arrangement were agreed to those members who were practising as specialists and who had but little night work to perform might assist by undertaking the work that might arise after 8 p.m. in connexion with the patriotic fund.

It was resolved that a sub-committee, consisting of Drs. Officer, Moss, Clemont, Robertson and Holland, together with the President and the Secretary, be appointed to consider the matter.

THE TREATMENT OF RETURNED DISCHARGED SAILORS AND SOLDIERS.

We print below the report of a sub-committee appointed by the Council of the South Australian Branch of the British Medical Association to consider the arrangements for the treatment of returned discharged sailors and soldiers. This report has not yet been considered by the Council of the South Australian Branch, and must therefore be regarded merely as a suggested method of dealing with the problem. We have been requested by the Chairman of the Federal Committee to publish it, in order that a concrete proposal may be before the members of the several Branches when the question referred to them by the Federal Committee is under consideration.

1. Scope of Work to be Done.—Returned soldiers and sailors discharged for any trouble or complication arising from injuries or diseases contracted on active service, who have been men of the Australian Imperial Force in camp in Australia and who have been discharged for some injury or disease arising out of service in the Australian Imperial Force, come under this head. Each discharged man entitled to the treatment would be given a card on discharge, giving certain particulars, among them would be the cause for discharge, with any other particulars of complaint the medical profession would deem advisable for the men to be in possession of, which he would show to the doctor at each visit.

2. Length of Time this Agreement Should be in Force.—As far as repatriation is concerned, it is until the person dies. As far as the Medical Association is concerned, as it would be at present experimental, the Committee suggests that two years from the date of signing of the agreement, and then subject to revision.

3. Medical Attendance.—This had better be divided into two classes, country and city and suburban practitioners.

A. Country Practitioners.

(1) Rate of Pay.—It is suggested that the medical practitioner should be paid for work actually done, and so paid so much for consultations and visits. A fee of 5s. for each room consultation at medical practitioner's, or visit within a radius of three miles from residence, was reasonable. Certificates to be included in the visit or consultation without extra fee. Repatriation would probably require to be notified before three visits are made, and also would probably require the cards initialled. Double fees for night work between 10 p.m. and 6 a.m.

(2) Mileage.—3s. 6d. a mile seems a fair rate after the radius of three miles, for one way only.

B. City and Suburban Practitioners.

(1) Lists of Medical Men Willing to Attend.—It seems advisable that lists of medical men willing to attend these cases should be made, as there are some medical men who would prefer not to attend.

(2) Same fees as country.

(3) Same mileage.

4. General Rules.—Acute major operation in country, where it endangers the man's life by removing him to some hospital in agreement with Repatriation, fee £5 5s.; for anæsthetist, fee £2 2s. Acute minor operations. Repatriation fee, £2 2s.; for anæsthetist, fee £1 1s. Specialists and consultation, fee £1 1s.

In several institutions in South Australia military patients, it was agreed, should be treated at the rate of 35s. per week.

Every man will probably be required to be sent to the nearest of these hospitals if the treatment is prolonged or if operation is required.

Medical Matters in Parliament.

THE MEDICAL ACT AMENDMENT BILL OF TASMANIA.

The following is the text of the Bill to amend the *Medical Act, 1908*, which is now before the Tasmanian Parliament:—

A Bill to Consolidate and Amend the Law Relating to Medical Practitioners.

Be it enacted by His Excellency the Governor of Tasmania, by and with the advice and consent of the Legislative Council and House of Assembly, in Parliament assembled, as follows:

1. This Act may be cited as *The Medical Act, 1918.*

2. (1) *The Medical Act, 1908*, is hereby repealed.

(2) Every person whose name is set forth in the First Schedule to this Act is hereby declared to be a legally qualified medical practitioner of this State under this Act, and the name of every such person, with his qualifications and residence, shall, without payment of any fee under this Act, be and be deemed to be registered in the book or register of legally qualified medical practitioners to be kept for the purpose pursuant to Section 9 of this Act, and every such person shall be deemed to be the holder of a certificate of qualification under this Act, and any certificate of qualification granted to him under *The Medical Act, 1908*, shall be deemed to be a certificate of qualification under this Act.

(3) The Medical Council of Tasmania formed under the Act hereby repealed shall cease to exist as a Council as from the date of the appointment of the Medical Council under this Act, but the members of such first-mentioned Council shall be eligible for appointment as members of the Medical Council under this Act.

(4) References in any Act, by-law, or regulation to the Court of Medical Examiners, formed under the Act of Parliament, 6 Victoriæ, No. 2, shall be deemed to refer to and mean the Medical Council appointed under this Act.

Part I.—Medical Board of Tasmania.

3. (1) For the purposes of this Act the Governor may appoint a Council, consisting of not less than five nor more than nine members, under the style of "The Medical Council of Tasmania," in this Act termed "the Council," and may from time to time nominate and appoint one of the members to be President of the Council.

(2) No person shall be appointed a member of the Council who is not a member of the medical profession.

(3) The Governor may from time to time remove all the members of the Council, or any of them, or the President, and may upon the removal, death, or resignation of any member of the Council appoint such other person as the Governor shall think fit.

(4) The Council shall have the powers and authority, and exercise the duties and functions, by this Act vested in or imposed upon it.

4. The Council may, with the approval of the Chief Secretary, from time to time make rules for regulating the meetings and proceedings of the Council and the conduct of the business thereof.

5. It shall be the duty of the Council, whenever requested by the Chief Secretary so to do, to furnish him with any information he may require respecting the proceedings or operations of the Council.

6. If, without leave previously obtained from the Council in that behalf, any member of the said Council absents himself from three consecutive meetings of the Council his seat shall thereupon become vacant.

Nothing in this section contained shall affect the power of the Governor to remove any member from office.

7. A quorum of the Council shall consist of not less than three members thereof, and in the absence of the President from any meeting of the Council one of the members present may be elected chairman of such meeting. During a vacancy in the Council the continuing members may act as if no vacancy had occurred.

8. Upon the appointment of any person as President or as a member of the Council, notice thereof by the Chief Secretary of this State shall be published in the *Gazette*, and the *Gazette* containing such notice shall be conclusive evidence of the appointment.

9. The Council shall from time to time cause the names of all persons certified by the Council to be legally qualified medical practitioners within the meaning of this Act to be registered, with their qualifications and residences, in a book to be kept by the Council for that purpose, in the form in the Second Schedule to this Act, or as nearly as conveniently may be in accordance therewith. A copy of the said register, as existing on the first day of January in every year, shall be delivered by the Council to the Chief Secretary on or before the fourteenth day of January in each year, and be published in the *Gazette* by the Chief Secretary as soon as practicable. A copy of the register for the time being so gazetted as aforesaid shall, upon production of the *Gazette* and without further proof, be evidence in all courts of law and before all justices and others that the persons therein specified are registered according to the provisions of this Act.

10. The Council may question any person who may attend before the Council as hereinafter mentioned, and any witness who may be produced before the Council, and may take a solemn declaration from such person or witness.

If any person shall wilfully, knowingly and corruptly make any false statement upon such examination or in such declaration, or shall utter or attempt to utter or put off as true before the Council any false, forged or counterfeit diploma, degree, licence, certificate or other document or writing, he shall be guilty of a misdemeanour, and being thereof duly convicted he shall be liable to be imprisoned for any period not exceeding three years.

11. The Council may from time to time make the necessary alterations in the registration of the qualifications and addresses of the persons registered under this Act, and may from time to time write or cause to be written a letter to any registered person, addressed to him according to his last-known address, to inquire whether he has ceased to practice or has changed his residence; and if no answer is returned to such letter within the period of six months from the sending thereof, the Council may erase the name of such person from the register, and may, if the Council afterwards thinks fit to do so, restore the same to the register.

12. If any registered medical practitioner, after the passing of this Act, shall—

(*i.*) Be convicted of felony or misdemeanour; or

(*ii.*) After due inquiry be judged by the Council to be guilty of infamous conduct in any professional respect—

the Council may, if it sees fit, refuse to issue a certificate under this Act, or, where the certificate has been issued, direct the name of such medical practitioner to be erased from the register.

13. The Supreme Court by *mandamus* directed to the Council may compel the registration or restoration to the register of any person who, in the opinion of the Court, shall have been unreasonably refused registration or removed from the register by the Council.

14. Every deputy-registrar of births or deaths, on receiving notice of the death of any medical practitioner, shall forthwith transmit such notice by post to the President of the Council in Hobart; and on receipt of such notice the Council shall erase the name of such deceased medical practitioner from the register of legally qualified medical practitioners; and any legally qualified medical practitioner, on changing his residence, shall intimate the same to the Council.

Part II.—Legally Qualified Medical Practitioners.

15. Every person possessed or hereafter becoming possessed of any one or more of the qualifications described in the Third Schedule hereto, who shall prove on personal attendance to the satisfaction of the Council that the testimonium, diploma, licence or certificate testifying to such qualification was duly obtained by him after due examination from some university, college or other body duly recognized for such purpose in the country to which such university, college or other body may belong, shall be and be deemed to be and shall be entitled to registration as a legally qualified medical practitioner, and shall receive from the Council a certificate of qualification.

16. If any person—

(*i.*) Fraudulently or by false representations obtains a certificate as a legally qualified medical practitioner under the provisions of this Act; or

(*ii.*) Forges, alters or counterfeits any such certificate; or

(*iii.*) Utters or uses any such forged, altered or counterfeited certificate, knowing the same to have been forged, altered, or counterfeited; or

(*iv.*) Falsely advertises or publishes himself as having obtained such certificate—

he shall be deemed guilty of a misdemeanour, and being thereof duly convicted shall be liable to imprisonment with or without hard labour for any period not exceeding three years.

17. It shall not be lawful for any person, unless registered under this Act, to pretend to be, or to take or use the name or title of a physician, doctor of medicine, licentiate in medicine and surgery, master in surgery, bachelor of medicine, doctor, surgeon, medical or general practitioner, or any other medical or surgical name or title; and every unregistered person so offending shall forfeit and pay a sum not exceeding fifty pounds, to be recovered in a summary manner. Provided that any person who shall feel himself aggrieved by any such conviction or order or justices may appeal therefrom, in accordance with *The Appeals Regulation Act*.

18. Every written prescription of a legally qualified medical practitioner shall be dated and bear the address and usual signature (including the surname) of such practitioner.

Any such practitioner who contravenes or does not comply with the provisions of this section shall forfeit and pay a penalty not exceeding five pounds, to be recovered in a summary way.

19. Every medical practitioner who, at the commencement of this Act, is gazetted as a legally qualified medical practitioner, or who shall have received such certificate of qualification as aforesaid, shall afterwards be entitled to sue in any court of law within this State, to the extent of the jurisdiction of such court, for the recovery of his fees or

other remuneration for his professional services, whether medical or surgical; and it shall be sufficient to state in the particulars of demand the words "for medical services," which shall include every demand for medical or surgical aid, including medicines, when supplied by the plaintiff to the defendant.

No person shall be entitled to recover any charge in any court of law for any medical or surgical advice or attendance, or for the performance of any operation, or for any medicine which he shall have both prescribed and supplied, unless he shall prove on the trial that he is registered in accordance with the provisions of this Act.

20. Nothing in this Act shall be construed to infringe on the rights and privileges hitherto enjoyed by chemists and druggists or dentists.

21. It shall be lawful for the said Council to demand and collect in respect of the several matters referred to in the Fourth Schedule to this Act the fees set out in such Schedule. All such fees shall be paid to the Council and applied for the purposes of this Act.

22. All offences against the provisions of this Act, other than offences hereinbefore declared to be misdemeanours, and all penalties and sums of money, under the provisions of this Act, may, unless otherwise provided, be prosecuted and recovered in a summary way by and before a police magistrate or any two or more justices in the mode prescribed by the *The Magistrates' Summary Procedure Act.*

First Schedule.

(Here follows a copy of the present Medical Register.)

Second Schedule.

(Here follows the scheme for making entries into the Medical Register.)

Third Schedule.

1. Fellow, Member, Licentiate or Extra-Licentiate of the Royal College of Physicians of London.
2. Fellow, Member or Licentiate of the Royal College of Physicians of Edinburgh.
3. Fellow or Licentiate of the King and Queen's College of Physicians of Ireland.
4. Fellow or Member of the Royal College of Surgeons of England.
5. Fellow or Licentiate of the Royal College of Surgeons of Edinburgh.
6. Fellow or Licentiate of the Faculty of Physicians and Surgeons of Glasgow.
7. Fellow or Licentiate of the Royal College of Surgeons in Ireland.
8. Licentiate of the Society of Apothecaries, London.
9. Licentiate of the Apothecaries' Hall, Dublin.
10. Doctor or Bachelor of Medicine, or Master in Surgery of any University within the British Dominions.
11. Any legally qualified practitioner registered (as appears by the published Medical Register for the time being in force) and any person possessing a qualification entitling him to be so registered in the United Kingdom under the Acts of the Parliament of the United Kingdom of Great Britain and Ireland passed respectively in the twenty-first and twenty-second years of Her Majesty intituled *An Act to Regulate the Qualifications of Practitioners in Medicine and Surgery*, and in the twenty-second year of Her Majesty intituled *An Act to Amend the Medical Act, 1858*, or any Acts amending the said Acts.
12. Medical officers duly appointed and confirmed of His Majesty's Sea or Land Service.
13. Any person who proves to the satisfaction of the Medical Council of Tasmania—
    (i.) That he has passed through a regular graded course of medical study of not less than four years' duration in a medical college situate in one of the States of the United States of America, and rated and accepted as of Class "A" by the Council on Medical Education of the American Medical Association; and
    (ii.) That he has received, after due examination, from such a medical college a medical diploma or degree, certifying to his ability to practise medicine or surgery, as the case may be; and
    (iii.) That he has received from the State Board of Medical Examiners of the State in which such medical college is situated a certificate or licence entitling him to practice medicine or surgery, as the case may be, in such State.

Fourth Schedule.

	£	s.	d.
For registering person as a medical practitioner	3	3	0
For registering each additional qualification	0	10	0
For restoring name to register	1	1	0

THE HEALTH OF MELBOURNE.

The annual report of the Health Committee of the City of Melbourne for the year 1917 was issued in March of this year and distributed in pamphlet form in June.

In the main report a short summary of the dark of the Officer of Health, Dr. T. W. Sinclair, is given, while other health activities of the Council are set out in more or less detail. Dr. Sinclair publishes a separate report, as do the Public Analyst, the Veterinary Officer and the Director of the Bacteriological Laboratory.

Vital Statistics.

The population of the area of the City of Melbourne is estimated at 105,690. This represents an increase of 508 over the figures for 1916. Of the 3,461 births which were registered in the city, 1,418 took place at the Women's Hospital. The birth-rate is given at 19.33 per 1,000, which represents a substantial reduction from the rate recorded in 1916. In arriving at this rate, the births notified from the Women's Hospital are deducted. In 1916 1,361 deaths of residents of the city were registered. In 1917 the number was 1,150. The Statistician apparently finds in the distribution of the deaths registered within the city boundaries a suitable occasion for applying obscure formulæ. Life is too short to question whether these formulæ are mathematically accurate. We are therefore prepared to accept his statement that the corrected city death-rate for the year was 11.27 per 1,000 of population. The death-rate for the whole State was 10.36, a figure arrived at without the aid of statistical puzzles. This rate is the lowest yet recorded. The infantile mortality rate works out at 65 per 1,000 births. This rate is also the lowest recorded.

From a table of the causes of death, it appears that 228 deaths were due to diseases of the heart and blood vessels (it is not stated whether these figures include the deaths from cerebral hæmorrhage, although this cause does not appear elsewhere on the list). Prematurity was responsible for 90 deaths, cancer for 86, tuberculosis of the lungs and pneumonia for 82 each (other tubercular diseases killed 15 persons), Bright's disease for 76, developmental diseases (what this means we do not know) 59, old age for 51, "other nervous diseases," exclusive of convulsions and meningitis, for 51, diarrhœa, dysentery and enteritis for 37, diphtheria for 11, cerebro-spinal meningitis for 8, pertussis for 6, influenza for 4, enteric fever for 3, and scarlatina for 2. There were four deaths from puerperal fever and twelve from other septic diseases.

While we recognize that a great difficulty surrounds the setting up of an accurate and intelligible classification of the causes of death, it appears to us that the grouping adopted by Dr. Sinclair, which is apparently based on the Bertillon system, is full of pitfalls and inconsistences, and is in urgent need of revision. It is impossible from the data given to utilize the information to full advantage for the prevention of disease.

There were 226 deaths of infants under one year of age. Of these, 90 were due to prematurity and 69 to "developmental diseases," 23 were due to diarrhœa and enteritis, 17 to pneumonia, four to pertussis, two each to cerebro-spinal meningitis, convulsions, meningitis, accident or negligence and septic diseases other than erysipelas. One death was caused by influenza, one by erysipelas, one by disease of the stomach, one by nervous affection and one by a respiratory condition.

Notifiable Diseases.

During the year 141 cases of scarlet fever were notified. This is equivalent to a case incidence of 1.33 per 1,000 of population. The death-rate was 1.41%. In 107 cases only

one person in the dwelling was affected. There were two patients in the same house on eight occasions, three patients on one occasion, and four patients on one occasion. Two patients were found in the premises of milk vendors. The sale of milk from these premises was stopped. Dr. Sinclair points out that no case of scarlet fever occurred among any of the customers. He does not mention whether the source of infection was traced, or whether means were adopted to prevent the spread. He records that 57 dwellings in which cases of the disease occurred were in an insanitary condition and that the defects were remedied.

During the course of the year 345 cases of diphtheria were notified. Dr. Sinclair regards this figure as very satisfactory, in view of the fact that in 1916 no less than 581 cases were notified. It must, however, be pointed out that the average for the past 20 years has been 248.9, a figure which is considerably lower than that for the year 1917. The incidence of the disease was 3.26 per 1,000 of population. There were eleven deaths, which yields a case mortality of 3.18. Dr. Sinclair is inclined to the opinion that the disease was milder in character than in the previous year. The case mortality was 7.73% in 1912, and had gradually declined to 4.99 in 1916. There is, however, a possibility that the decrease in fatality may have to some extent been due to more energetic, specific treatment at an early stage. The age incidence of the disease is also an important factor in the mortality. There were 82 cases in children under five years of age and five deaths, 128 cases in children between five and ten and five deaths, and 135, with one death, in persons over ten years of age. It appears that 251 patients were so-called "single" cases, while two cases occurred in each of 27 houses; in one house there were three patients and in three houses there were four patients in each. Fifteen of the inmates of the Children's Home in Flemington Road became infected, and ten inmates of ofter institutions also caught the disease. The infection at the Children's Home was mild; preventive measures were adopted and the outbreak was checked. Dr. Sinclair points out that in at least thirteen instances the infection was derived from a source outside the city area. Defects in sanitation were discovered in 157 of the houses in which there were diphtheria patients.

The total number of cases of enteric fever was 18. In 1898 no less than 237 cases were notified. The disease was very prevalent from that date to 1910, with the exception of two years, 1905 and 1907. In 1911, 1912 and 1913 the annual incidence was just about 50; in 1914 it was reduced to 36, in 1915 and 1916 it was 23. Dr. Sinclair does not offer any explanation for the remarkable reduction in the frequency of the disease. There is, however, very little doubt that the large drop was due to the introduction of water-borne sewerage systems, and that the subsequent gradual decline is attributable largely to improved sanitary control. There were three deaths, which is equivalent to a case mortality of 16.66%. In recent years the mortality has been relatively high. This may be explained by the comparatively small number of cases.

Only one case of poliomyelitis was notified during 1917. The source of infection in this case, although sought, was not discovered.

There were 19 cases of cerebro-spinal meningitis, as compared with 70 in 1915. The disease was fatal in eight cases. This yields a case mortality of 42.1%, which may be regarded as an average figure. From the enquiries made, it appears that only two of the patients had, prior to infection, been in contact with other persons suffering from the same disease. Notwithstanding this negative evidence, persons who have been in contact with patients were isolated, with apparently good results.

Puerperal fever was rendered a notifiable disease on December 19, 1917. During the remainder of the year no cases were notified, but four deaths occurred in the course of the year.

The total number of cases of pulmonary tuberculosis notified during the year was 105. Dr. Sinclair does not give the numbers notified in previous years. There were 82 deaths from this disease, which is equivalent to 0.77 per 1,000 of population. The average number of deaths during the previous seven years was 92, but it must be recorded that the returns for 1916 and 1917 include deaths in the Austin Hospital of persons usually resident in the city. The total number of deaths from all forms of tuberculosis was 97. During the year 102 persons were admitted to sanatoria for consumption, while five other patients were admitted to the Austin Hospital. On the discharge of patients from sanatoria, the Council's Nurse Inspector paid periodic visits to their homes. A short summary is given of the clinical histories, so far as they have been ascertained, of 124 patients. From this summary it appears that the infection occurred in Egypt or Gallipoli in the case of three ex-soldiers and in England in the case of one ex-soldier and a munition worker. Evidence of direct infection was obtained in eleven cases, exclusive of sixteen instances in which the disease had attacked another member of the family. It appears that the municipal authorities held a conference in the latter part of 1916, to consider the question of the establishment of a farm colony for convalescent consumptives. After mature consideration the proposal was put to the Government that an institution of this kind should be established and maintained by the State. The Minister for Health promised further consideration of this subject after the termination of the war.

Maternal and Infant Visitation.

The Council's Nurse Inspector visited during the course of the year 1,845 infants. She ascertained that 1,539 of these infants were breast-fed, and that an additional 107 were reared on *allaitement mixte*. Cow's milk, as the only food, was given to 97 infants, while 96 infants were reared on other food. The extraordinary statement follows that six infants were "never fed."

The question of the institution of infant welfare centres was considered, and two centres were privately established by the Infant Welfare Society. During the year milk was supplied at a cheap rate under the agreement of the Council with the Talbot Institute.

The Sanitary Control of Premises.

In the year 1917 849 premises were condemned on the ground of some sanitary defect; 17 of these houses were demolished, satisfactory repairs were carried out in 523, the work of repairing was in progress in 157, while the remaining 23 were vacated.

The Council's Inspectors paid 5,124 visits to restaurants and shops at which various foodstuffs are offered for sale. Defects were found in 90 of the premises. Six of the houses were entirely reconstructed, 72 were partly reconstructed and 12 were abolished. A considerable quantity of food was seized and destroyed, on account of it being unfit for human consumption.

The proprietors of these premises were notified that, in accordance with the *Venereal Diseases Act, 1916*, no person suffering from any contagious or infectious disease, including venereal disease, may manufacture, prepare, pack, store, carry, deliver, hawk or handle in any way any food or drug intended for human consumption or use by any other person. No mention is made of any action taken in connexion with this regulation.

Applications for the registration of common lodging houses were approved in 65 instances. Six of these premises were registered for the first time. Two premises were closed. Steps were taken to compel owners to repair insanitary or dilapidated conditions of five premises.

During the course of the year 248 applications for registration of factories were registered. In nine instances the application was refused, in thirteen it was deferred pending structural and other alterations, and in 226 registration was approved.

Food Control.

The Council purchased 321 samples of food for the purposes of analysis. Of these, 25 were found to be adulterated. The total amount of fines and costs was £99 9s. Of these, 277 were samples of milk. In two instances small quantities of boric acid were discovered to have been added to the milk. The total number of adulterated samples was 19. A warning was issued in three cases, "as the deficiency below the standard was very small."

Offensive Trades.

The total number of premises registered for the purpose of carrying on offensive trades was 53. The occupiers or owners of these trades complied with all the requirements of the Council. Two applications were refused.

The remainder of Dr. Sinclair's report deals with minor matters.

The Public Analyst gives a general summary of the form of adulteration of the foodstuffs analysed by him. In regard to the milk analyses, he does not state how far the alleged adulterated samples differed from the standard. He discovered in six samples of sausage meat sulphur dioxide varying in amount from a trace to nine grains in the pound.

The report of the Director of the Bacteriological Laboratory, Dr. R. J. Bull, reveals the fact that no excremental bacteria were discovered in samples of Glaxo, Lactogen, separated milk, sweetened condensed milk, Nestlé's condensed milk and unsweetened condensed milk. The number of bacteria discovered per cubic centimetre of milk varied up to 2,700 (standard sweetened condensed milk, Standard Dairy Company, Brisbane).

In addition to the usual number of diagnosis examinations carried out for the Council, some investigations were made in connexion with the infection of shaving brushes with anthrax bacilli.

Naval and Military.

CASUALTIES.

It is with great regret that we learn from the 432nd list of casualties that Captain Alfred Raymond Fox died of illness upon August 24, 1918.

HONOURS.

We learn from the press that Captains J. I. Chirnside, J. E. McGlashan, H. C. Trumble, G. P. Arnold, E. N. Docker, F. W. Fay and E. G. Thompson have been awarded Military Crosses.

Hospitals.

THE CHILDREN'S HOSPITAL, MELBOURNE.

The forty-ninth annual report of the Committee of Management of the Children's Hospital, Pelham Street, Carlton, and the Convalescent Home for Children, Hampton, to the life-governors and subscribers for the year ended June 30, 1918, states that the hospital has maintained its efficiency, despite the unusual conditions. The patients admitted into hospital during the year numbered 2,586, being slightly less than the numbers in 1916 and in 1917. The number of children treated in the Out-Patients' Department numbered 12,757, while the separate attendances amounted to 87,687. The daily average of occupied beds was 166, the largest number yet seen in the hospital. The kitchen of the hospital has been altered, the coal range being superseded by a complete plant, in which all cooking is done by steam and gas.

Owing to the increasing demands upon the Out-Patients' Department, the present arrangement of surgeries and examination rooms has become insufficient. The Committee had decided to take no action during the year, when the medical staff urged that there should be no further delay in the reconstruction, since the annual attendance of patients had increased from 55,000 in 1899, when these surgeries were opened, to 85,000 in 1917, since the introduction and growth of the special departments connected with X-ray, dental and massage work had made further calls on the already limited space, and since the tendency in all hospitals had been to utilize the Out-Patients' Department more fully for surgical work. A further investigation convinced the Committee that the conditions in the department were such that the treatment of the patients was being hampered by the severe congestion, and that children and parents were undergoing undesirable inconvenience. It was decided to reconstruct the surgeries, theatres, examination rooms and special rooms of the Out-Patients' Department. There appeared to be no need to increase the general waiting room, which is of ample size. While plans and specifications of these works were being prepared, the honorary medical staff brought forward the question of saving infant life, and urged that more cots should be provided. The committee decided to grant the request of the medical staff and to erect a new ward above one of the existing buildings, and to supply it with a flat roof for open-air treatment. The two schemes of building are not dependent upon one another, but the Committee have been advised that if both are included in one contract the hospital will gain in economy. The Committee records the loss of two of the late Resident Medical Officers, Captain Norman J. Bullen and Captain W. Shenton Garnett, who have been killed in action. The Committee accord their sympathy with the relatives of these highly capable young men, whose loss is keenly felt. Captain Bullen bequeathed to the hospital the whole of his library and surgical instruments.

An epidemic of a most severe form of infantile paralysis threw a strain on the accommodation of the hospital until arrangements had been made to treat the cases during the acute stage at the Infectious Diseases Hospital, Fairfield. This epidemic entailed a large amount of additional work upon the massage department, and the splint department proved a great boon, inasmuch that appliances were fitted to the patients with a minimum of delay. During the epidemic a flat, containing 30 beds, was set aside for the accommodation of the infected children. The supreme importance of an efficient bacteriological department has been emphasized again during this epidemic. The work done in diagnosis, treatment and research in the pathological department is considered to have been of incalculable benefit to the patients. The necessity of providing more outside accommodation for children at the Convalescent Cottage, Hampton, during inclement weather had been felt for some time, and the Committee is gratified to state that additional verandahs have been erected.

The maintenance fund shows that £17,156 have been spent on the work of the hospital, provisions costing £2,756, drugs, appliances and surgical instruments £3,180, furniture, fuel and light £2,357, salaries and wages £6,855, insurance, rent and taxes £427, and printing and cartage £347. The cost of administration, including salaries, was £1,230. The extraordinary expenditure amounted to £964. The hospital started the year with a balance of £2,095. During the year it received from all sources £16,366, so that the year closed with a balance forward of only £341.

The annual report of the pathological department shows that much routine work has been carried out. The swabbings from the noses and throats of patients with suspected diphtheria numbered 4,989, and the Klebs-Löffler bacillus was found on 310 occasions. The number of examinations of cerebro-spinal fluid fell during the year from 707 to 311, owing to th etransfer of the acute cases to the Infectious Diseases Hospital. Much work has been done in connexion with therapeutics, many vaccines having been prepared from bacterial products. During the winter of 1917, 500 doses of whooping-cough vaccine were made for use in treating the patients and for prophylaxis. Another extension of this class of work is the production of a bacillary emulsion as a source of tuberculin. In respect to serum-therapy the work of the pathologist is limited to human immune sera. Such sera have been made use of in the treatment of poliomyelitis, chorea and other diseases of the nervous system. Much research work was carried out in respect to the serum treatment of epidemic poliomyelitis. The pathologist made 159 autopsies, in connexion with which 301 sections were prepared for microscopical examination.

The report of the Committee contains a return showing a classification of the diseases for which patients were admitted into the hospital. This report shows that 76 patients were admitted for epidemic poliomyelitis during the late summer months. The death-rate from the disease was 4.5%. The Chief Medical Officer states that in several of the patients the recovery from paralysis was apparently complete. During the year the hospital received £2,877 from the estate of the late Robert Stroud, for which the Committee records its grateful thanks.

We are pleased to announce that the proposal made at the Conference of the Health Inspectors of New South Wales to suppress the dangerous and unnecessary habit of kissing to prevent the spread of infectious diseases, and particularly tuberculosis, was lost. The Conference was of opinion that this matter should be left to individual choice.

Public Health.

THE HEALTH OF AUSTRALIA.

Infective Diseases Notified in Australia During the Quarter Ending June 30, 1918.

	New South Wales.		Victoria.		Queensland.		South Australia.		Western Australia.		Tasmania.		Commonwealth.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.[1]	Deaths.
Enteric Fever	175	23	75	10	124	11	60	1	58	9	56	5	548	59
Scarlatina	414	2	685	3	121	1	131	0	361	4	20	0	1,732	10
Diphtheria	1,932	94	2,093	55	725	27	438	21	506	9	245	8	5,939	214
Pul. Tuberculosis	304[2]	270	335	244	93	86	99	71	95	61	51	22	—	754
C'bro-Spinal Menin.	22	10	14	11	35	14	9	4	2	2	4	2	86	43
Poliomyelitis	22	0	80	11	8	10	0	1	3	1	4	0	117	23
Malaria	3	1	0	0	20	11	0	0	3	0	0	0	26	14[3]
Puerperal Fever	—	24	0	10	6	5	4	3	1	3	7	5	—	50
Septicæmia, Pyæmia	—	10	0	6	—	3	—	2	6	2	—	0	—	23
Bilharziosis	—	0	—	0	2	0	0	0	0	0	0	0	—	0
Morbilli	—	2	—	1	—	0	9	0	—	0	—	1	—	4
Pertussis	—	22	—	10	—	6	39	0	—	4	—	1	—	43
Ophthal. Neonatorum	—	2	0	0	—	0	0	0	2	0	1	0	—	2
Erysipelas	—	2	0	4	28	5	55	0	15	0	0	0	—	11
Anchylostomiasis	—	0	—	0	2	0	0	0	—	0	—	0	—	0
Favus	—	—	—	—	—	—	3	0	0	0	—	—	—	0
Hæmaturia	—	—	—	—	—	—	—	—	2	0	—	—	—	0

[1] The total number of cases notified is not given of those diseases which are not notifiable in all the States.
[2] Notifiable only in portion of the State.
[3] Including two deaths in the Northern Territory.

WESTERN AUSTRALIA.

The following notifications have been received by the Department of Public Health, Western Australia, during the week ending September 14, 1918:—

	Metropolitan. Cases.	Rest of State. Cases.	Totals. Cases.
Enteric Fever	2	1	3
Scarlatina	12	7	19
Diphtheria	8	9	17
Pulmonary Tuberculosis	8	3	11
Erysipelas	1	0	1
Puerperal Fever	1	0	1

NEW ZEALAND.

The following notifications have been received by the Chief Health Officer, Department of Public Health, Hospitals and Charitable Aid, New Zealand, for the four weeks ending September 16, 1918:—

Diseases.	No. of Cases.
Scarlatina	110
Diphtheria	415
Enteric Fever	16
Pulmonary Tuberculosis	95
Cerebro-Spinal Meningitis	26
Puerperal Fever	13
Erysipelas	6
Trachoma	1
Septicæmia	2
Hydatids	2
Ophthalmia Neonatorum	1

TASMANIA.

The following notifications have been received by the Department of Public Health, Tasmania, during the three weeks ending September 21, 1918:—

Diseases.	Hobart. Cases.	Launceston. Cases.	Country. Cases.	Whole State. Cases.
Enteric Fever	0	0	1	1
Scarlatina	0	2	4	6
Diphtheria	5	2	11	18
Pulmonary Tuberculosis	3	1	3	7
Puerperal Fever	0	1	1	2
C'bro-Spinal Meningitis	0	1	0	1
Ophthalmia Neonatorum	0	0	1	1

QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, during the week ending September 28, 1918:—

Diseases.	No. of Cases.
Enteric Fever	4
Scarlatina	4
Diphtheria	48
Pulmonary Tuberculosis	14
Erysipelas	2
Cerebro-Spinal Meningitis	2
Puerperal Fever	1

VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the week ending September 29, 1918:—

	Metropolitan. Cs.	Dths.	Rest of State. Cs.	Dths.	Total Cs.	Dths.
Enteric Fever	0	0	1	0	1	0
Scarlatina	27	3	17	0	44	3
Diphtheria	90	7	55	3	145	10
Pulmonary Tuberculosis	23	9	15	5	38	14
C'bro-Spinal Meningitis	2	—	0	—	2	—

Obituary.

GEORGE GORDON GRANT.

It is with great regret that we have to announce the death from malaria, whilst on active service in Palestine, of George Gordon Grant, Second Senior Assistant in the Microbiological Laboratory of the Department of Public Health, Sydney.

Mr. Grant was born in Kent in 1873, and was appointed as Laboratory Assistant in the Department of Public Health, under Dr. Tidswell, on April 23, 1898. Some little while after the outbreak of war Mr. Grant enlisted in the Australian Army Medical Corps, and was attached as Staff Sergeant to No. 3 General Hospital, under Colonel Fiaschi. He sailed for England on May 15, 1915. With Colonel C. J. Martin, of the Lister Institute, he left for Lemnos in July of the same year, but was invalided to England in 1916. He returned to

Egypt, and, again under Colonel Martin, joined the Expeditionary Force to Palestine. He was present at the operations at Romani, El Arish, Gaza, Beersheba, Jerusalem and Jericho. He obtained his commission in 1917, and was mentioned in General Allenby's despatch of April 3, 1918. A cable has been received, intimating his death from malaria in Egypt on August 31, 1918.

Those acquainted with the bacteriological work of the Public Health Department and medical practitioners who have had examinations made at the Microbiological Laboratory, will remember his fine personality and cheery disposition. Those under whom he has worked have always recognized his exceptional ability, his thoroughness and his command of technique. His loss will be felt acutely by all who have worked in association with him, and bacteriological science in Australia has to deplore the passing away in the prime of life of one of its earliest workers.

Medical Appointments.

During the temporary absence on duty of Dr. Bedlington Howel Morris (B.M.A.) Dr. Edward Angas Johnson has been appointed Deputy Inspector-General of Hospitals for South Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xv.

In future, no advertisements inviting applications from medical practitioners for positions in public institutions will be accepted unless the appointment is limited to medical practitioners who are ineligible for military service, or who have returned from military service. The term "ineligible for military service" is used to signify practitioners who are above military age, those who have offered their services and have not been accepted by the military authorities, or those who, for valid reasons, are incapable of applying for a commission in the Australian Army Medical Corps.

Renwick Hospital for Infants, Sydney, Honorary Assistant Physician.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other contract practice. Australian Prudential Association Proprietary, Limited. National Provident Association. Mutual National Provident Club.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Rockhampton Associated Friendly Societies. Cloncurry Hospital.
SOUTH AUSTRALIA. (Hon. Sec., 8 North Terrace, Adelaide.)	Contract Practice Appointments in South Australia. Contract Practice, Appointments at Renmark.
WESTERN AUSTRALIA. (Hon. Sec., Health Department, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United F.S. Dispensary. Canterbury United F.S. Dispensary. Leichhardt and Petersham Dispensary. M.U. Oddfellows' Med. Inst., Elizabeth Street, Sydney. Marrickville United F.S. Dispensary. N.S.W. Ambulance and Transport Brigade. North Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Parramatta, Auburn and Lidcombe. Newcastle Collieries — Killingworth, Seaham Nos. 1 and 2, West Wallsend.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, N.Z.

Diary for the Month.

Oct. 15.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
Oct. 16.—W. Aust. Branch, B.M.A.
Oct. 17.—Vic. Branch, B.M.A., Council.
Oct. 18.—Q. Branch, B.M.A., Council.
Oct. 18.—Eastern Suburbs Med. Assoc. (N.S.W.).
Oct. 19.—Northern Suburbs Med. Assoc. (N.S.W.).
Oct. 22.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
Oct. 25.—N.S.W. Branch, B.M.A.
Oct. 30.—Vic. Branch, B.M.A., Council.
Oct. 30.-Nov. 2.—Eye, Ear, Nose and Throat Congress, Melbourne.
Oct. 31.—S. Aust. Branch, B.M.A.
Nov. 1.—Q. Branch, B.M.A.
Nov. 4 to 13.—Vic. Branch, B.M.A., Nominations Received for Council.
Nov. 8.—S. Aust. Branch, B.M.A., Council.
Nov. 8.—N.S.W. Branch, B.M.A., Clinical.
Nov. 12.—Tas. Branch, B.M.A., Council and Branch.
Nov. 12.—N.S.W. Branch, Ethics Committee.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this Journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.